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A SCIENTIFIC QUARTERLY DEALING WITH EXTRASENSORY PERCEPTION, THE PSYCHOKINETIC EFFECT, AND RELATED TOPICS

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Parapsychology

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AN EXPLORATORY INVESTIGATION OF PK IN A GAME SITUATION

By RENA J. RATTE AND FRANCES M. GREENE[1]

ABSTRACT: A PK test with dice was fitted into a game situation in order to make use of the psychological advantages which games may offer over the usual test conditions. This PK game, designed for four players, was patterned after the game of basketball, with the throws of the dice determining whether the player made a basket, a miss, a foul, a free throw, etc. There were five major scoring categories, two of which gave significant results. The eight major participants among the 21 subjects filled out a "luck" questionnaire designed to determine the subject's self-rating with regard to the feeling of being lucky or unlucky. When the ratings were compared with the actual scores of these subjects in the basketball game, there was found to be a significant correlation between the feeling of being lucky or unlucky and the high and low scores on the tests.

The authors were members of the Parapsychology Laboratory of Duke University at the time the research was carried out. Dr. Ratte is now an instructor in Philosophy at Lewis and Clark College, Portland, Oregon, and Mrs. Greene holds a Mental Health fellowship in Psychology at George Peabody Institute in Nashville, Tennessee.—Ed.

INTRODUCTION

THERE ARE A NUMBER of reasons for considering the possibility that a game rather than a test situation may be a good means for inducing a higher order of psi performance. First of all, it has long been considered that performance in psi tests is dependent on motivation, and the game situation is one in which, as a general rule, strong motivation is assured. Secondly, it is psychologically desirable to administer a psi test without having the subject feel ill at ease because he is being tested. In the well-designed game, the subject becomes so engrossed in the play itself that he loses the self-consciousness characteristic of the subject in an ordinary test. And

[1] Dr. Ratte was supported in this research by a Ralph Drake Perry fellowship.

finally, the boredom and fatigue which, in the usual psi test, often replace initial interest can be largely avoided.

The Game

The game used in this research was called "PK Basketball." Working from a game idea contributed by Mr. Douglas Steen, who had himself made a serious attempt to combine PK testing and game procedure in a single unit (2), two members of the Duke Parapsychology Laboratory, Frances M. Greene and Mrs. Peggy Murphy, designed a test with dice which incorporated elements analogous to those found in a basketball game. These elements were accordingly called "baskets," "fouls," "foul shots," and "blocks." The game is designed for four subjects, or two sets of partners, each set functioning as a team. Partners sit opposite each other and all play is clockwise, as in bridge. There are four quarters to a game, with 24 throws of three dice per quarter (six per player) for a total of 96 throws. In addition, there are special throws for blocking the opponent's hits and for foul shots.

The game is played with three dice, two having the six faces numbered in the usual way and the third having six color faces (red, purple, yellow, blue, orange, and green). Briefly, the purpose of the game is to throw designated target numbers on the number, or basket, dice and to avoid a particular color on the color or foul die.

A successful throw with the number dice is one in which the player makes either a complete or a partial hit. The ways in which such hits are to be made are given in Table 1. A complete hit in any quarter results in an immediate basket. A partial hit gives one step, three such hits being required for a basket in the first three quarters and two in the fourth quarter. Remaining partial hits may be carried over from quarter to quarter in the first three quarters, but not from the third to the fourth. It should also be noted that partners do not add together partial hits to make baskets. Each subject advances individually, though partners add their scores together for a final team score.

Should any player throw either a partial or a complete hit, the player seated at his left has the opportunity to block (i.e., to prevent the opponent's good shot from counting toward the game score). In all quarters, a basket is blocked with a basket; for example, in the first quarter, either a 1-1, 1-2, 2-1, or 2-2 will block a 1-1 complete hit. In the final quarter there is, of course, only one way to block a

Table 1

SCORING COMBINATIONS IN PK BASKETBALL

Quarter	Target faces	Complete Hit	Prob.	Partial Hit	Prob.*
1	1+2	1+1, 2+2, 1+2, 2+1	1/9	1 or 2 and any other face	1/2
2	3+4	3+3, 4+4, 3+4, 4+3	1/9	3 or 4 and any other face	1/2
3	5+6	5+5, 6+6, 5+6, 6+5	1/9	5 or 6 and any other face	1/2
4	1+1, 1st round 2+2, 2nd round 3+3, 3rd round 4+4, 4th round 5+5, 5th round 6+6, 6th round	1+1 2+2 3+3 4+4 5+5 6+6	1/36	1 and any other face 2 and any other face etc.	2/7

* The probability given in this column is the probability of a partial hit on a trial that is known not to be a complete hit.

This basis of calculation assumes that complete hits take precedence over partial hits, as has apparently been the case in the applications of the game so far, and it allows the partial hits to be evaluated independently of the complete hits. By this procedure, however, the number of trials for partial hits is not likely to be the same for each die face, and this fact would need to be taken into account in some suitable manner in the statistical evaluation before significant results could be claimed for partial hits.

complete hit and that is to throw exactly the same faces. In all quarters, a partial hit is blocked by throwing with a single die the *same* face as that thrown by the former player.

The players at the beginning of each game select the foul color for that game, the only restriction being that each color has to be target once in each set of six games. The foul color remains the same throughout the game. Any player throwing this color is charged with committing a foul which means that his opponent to the left has an opportunity to make a free shot. A successful foul shot is either a double (2 points) or a single (1 point) of a particular number called in advance by the person who has earned the free throw.

It is possible that any player may throw the dice three times: first, to block his opponent's sucessful throw (throwing one die against a partial hit or two dice against a complete hit); second, two number dice for a free throw (if the opponent has committed a foul); and third, the two number dice and the color die for his regular turn.

Score points in the game itself are given only for unblocked baskets (2 points) and for successful foul shots (1 or 2 points depending on whether a partial or a complete hit was thrown).

A sample of a filled-in score sheet is included as Appendix A. On each trial for score the recorder placed in the first column a "B" if the throw was a complete hit, a "1" if it was a single hit, and a zero if there was no hit. All blocked hits were crossed out. Whenever an unblocked complete hit or three unblocked partial hits (two in the fourth quarter) were thrown, a "B" was placed in column 2. Fouls and foul shots were recorded in the third column, an "O" on the thrower's record indicating that he had committed a foul and a "1" or "2" on the opponent's record indicating that he had made a successful foul shot.

Procedure

The research was carried out with a group of camp counselors, mostly of college age, at a girls' camp in Maine. It covered a period of approximately two months and consisted of seven series of 20 games each, or a total of 13,440 individual trials for score. Although 21 subjects participated, only 10 played in 20 or more games. Five of the 21 were not counselors but friends of R.J.R. who volunteered to take part in the last five games of the final series since the camp had closed before this series could be completed.

All throws, with the exception of those in the first 16 games of Series I, were made from a dice cup. In these first games, the dice were forcefully thrown on a rough surface (a fiber rug).

Series I through V were carried out at the camp in the evenings between the hours of 9:00 and 11:00, when the counselors were off duty. The usual length of play was five games. The counselors sat on the floor and threw the dice on the fiber rug.

Series VI was carried out on a mountain trip under similar conditions except that the dice were thrown on a smooth surface. The first 15 games of Series VII took place, after camp closed, at a party given by one of the counselors. The last five games in this series were played in R.J.R.'s home. Again, in both series, the throwing surface was smooth.

The same dice were used throughout the experiment. The numbered dice were the ordinary commercial variety with excavated spots; the colored die had inlaid sides. Since each die face for both foul and basket dice served as target an equal number of times, the question of dice bias need not enter into any over-all consideration of results, except for foul shots where subjects had a choice of target.

All scoring was done by the experimenter, who also served as a subject on those occasions when only three players were available.

Toward the end of Series I a "luck" questionnaire was administered to eight of the major participants. The purpose of the questionnaire was to determine whether there might be a correlation between an individual's self-rating in regard to a feeling of being lucky or unlucky and his actual score on PK Basketball.

Results

The five major categories into which the data fall are: complete hits in the first three quarters; complete hits in the fourth quarter; partial hits in the first three quarters; partial hits in the fourth quarter; and fouls. In the first three quarters, where the probability of a complete hit is 1/9, there was a positive deviation of 81, with a CR of 2.57 ($P = .01$). For complete hits in the fourth quarter, where the probability is 1/36, there was a positive deviation of 18.7 with a CR of 1.96 ($P = .05$). When these two probabilities are combined by Fisher's method the resultant $\chi^2 = 15.21$, which, with 4 d.f., has a probability of .005.

For partial hits in the first three quarters there was no deviation from chance, and in the fourth quarter there was a negative deviation of 11.

Fouls committed in all quarters gave a negative deviation of 137, with a CR of 3.17 ($P = .0015$). Since fouls are to be avoided, the negative deviation is in the desired direction.

The data for these five categories are summarized in Table 2.

Table 2

Category	Trials	Prob.	Hits	Dev.	CR	P
Complete hits, 1st, 2nd, 3rd quarters.	10080	1/9	1201	+ 81	2.57	.01
Complete hits, 4th quarter.....	3360	1/36	112	+ 18.7	1.96	.05
Partial hits, 1st, 2nd, 3rd quarters.	8879	1/2	4439	0		
Partial hits, 4th quarter.....	3248	10/35	917	− 11		
Fouls.....	13440	1/6	2103	−137	3.17	.0015

The special throws for blocks and foul shots were introduced mainly for the sake of the game rather than for the purpose of testing PK. Evaluation of the results of blocking totals on both partial and complete hits in all quarters showed a negligible deviation from chance.

On foul shots (free throws) there was, for complete hits, a deviation of −8.4, and for single hits a deviation of +45.4 (CR = 2.22; P = .026).

In order to compare the luck questionnaire ratings and actual scoring, a numerical value was assigned to each questionnaire answer and the mean total score was determined for the group. A chi-square was then set up to test the assumption that those with high questionnaire ratings would score above chance in each of the five major game categories and that those with low ratings would score below chance in these same categories. Table 3 shows the results of this analysis.[2] The chi-square is 9.20 which, with 1 d.f., has a probability of .002.

Table 3

COMPARISON OF GAME SCORING AND LUCK QUESTIONNAIRE RESULTS

	Game Score Above Chance	Game Score Below Chance	
Luck Rating Above Aver.	65	32	97
Luck Rating Below Aver.	41	50	91
	106	82	188

χ^2 (1 d.f.) = 9.20
P = .002

[2] Not included in the chi-square evaluation are complete hit scores from the fourth quarter where the subject had played less than six games (or had had less than 36 trials, chance being 1/36 for this category). An evaluation of these scores, however, shows the same trend as the rest of the data. Of seven above-chance scores, four were correlated with above-average luck ratings and three with below-average. Of 10 below-chance scores, three were correlated with above-average and seven with below-average ratings.

Discussion

R.J.R. had noticed that in a dice game called "Yogi," which was extremely popular with the counselors the previous season, what seemed like an unusual number of complete hits were thrown. However, since Yogi was too complicated to permit of statistical analysis, it was decided that if at all possible a new game, the results of which could be evaluated, should be introduced to the counselors the following season. When PK Basketball was presented to this group, it was presented as a game and not a test; that is, the subjects were not committed to any particular number of games and had they not enjoyed Basketball as much as Yogi the game would have been discontinued. The experimental conditions selected were those which the experimenters thought would not destroy the game atmosphere.

The experimenter administering the test had been the camp director for five years. Seven of the 10 major participants were old staff members, and the relationship between the staff and director was very friendly. The counselors were interested and relatively well-informed about the field of parapsychology, having participated in ESP experiments carried out in the previous years with the campers.

The recording was all done by the experimenter, although the players were keenly interested in the score and knew how it was kept; and so, to some degree, all acted as observers. They were not, however, explicitly instructed to take responsibility for accuracy.

With the exception of the assessment of foul shots, all evaluations are on the safe side as far as any effect of physical bias of the dice is concerned; therefore the results suggest that PK was in operation. Because of the exploratory nature of the experiment, the statistical evaluations to be used were not specified in advance, although given the purpose of the game, those which were used would seem to be justified.

The significant throwing came from the major, or scoring, throws. It is interesting to note that complete hit scoring was significant, while partial hit scoring was close to chance. These results seem to have a rationale in that the major throw is perhaps the most highly motivated throw, and the subject's goal on the major throw is, of course, the complete hit or basket, the partial hit being a consolation prize more than anything else.

Perhaps the most interesting result in the research was the correlation between luck-rating and PK scoring. The luck questionnaire was a revision of one used in an experiment by one of the authors (1), who changed the original form to exclude questions of interest to psychologists only and to add questions particularly relevant to luck as it may be related to PK. (The revised questionnaire is included as Appendix B.) The results on this aspect of the experiment indicate that there may be, in what is called "luck," evidence of spontaneous PK. And, since there is a significant correlation between the luck rating and the PK score, it is also possible that with a refined questionnaire one might with some degree of accuracy be able to select the good PK subject. It should be noted that in Greene's experiment high-luck ratings showed no positive correlation with PK results, but in that instance standard testing procedures were used which the experimenter did not consider suitable for testing this relationship.

It is felt that the results of this research suggest that the game situation is a desirable medium for PK testing; although it has already been said (2, p. 146) that the game alone, while helping to achieve desirable psychological conditions, will not automatically provide such conditions. Perhaps the aim should be to find a game which is highly motivating to a particular group of subjects and then play this in a generally positive social atmosphere.

Perhaps the game of PK Basketball might profitably be introduced into other situations, as for example one in which the spirit of competition has already been established. Subjects might be the sports squads of competitive schools. One would here be utilizing a ready-made situation in which high motivation is to be expected.

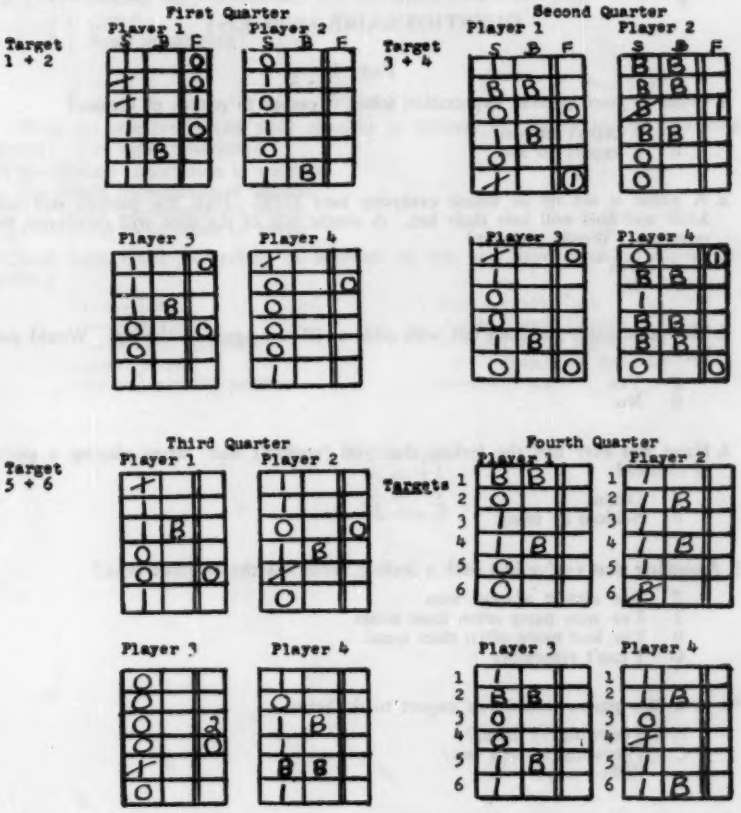
References

1. Greene, Frances M. The feeling of luck and its effect on PK. *J. Parapsychol.*, 1960, 24, 129-41.
2. Steen, Douglas. Success with complex targets in a PK baseball game. *J. Parapsychol.*, 1957, 21, 133-46.

APPENDIX A

SAMPLE SCORE SHEET

Foul Color: Red



Player's Name	Complete Hits 1-2-3	Complete Hits 4	Partial Hits 1-2-3	Partial Hits 4	Fouls
1. Jan Weed	1	1	13	2	6
2. M. Turbyne	4	1	7	5	1
3. Alice Crow	0	1	8	3	5
4. Mary Crow	4	0	7	5	3

APPENDIX B

QUESTIONNAIRE (With Key)

Part 1

1. What is your general expectation when it comes to games of chance?
   - 2 I expect to win
   - 0 I expect to lose

2. A game is set up in which everyone bets $1.00. Half the players will win $2.00 and half will lose their bet. A single roll of the dice will determine the outcome. Would you bet?
   - 2 Yes
   - 0 No

3. The same game as above but with odds of 10 to 1 against winning. Would you bet?
   - 2 Yes
   - 0 No

4. Have you ever had the feeling that you "couldn't lose" when playing a game of chance?
   - 2 Often
   - 0 Seldom or never

5. Assuming that you've had such a feeling, what has the outcome been?
   - 2 I've almost always won
   - 1 I've won more often than usual
   - 0 I've lost more often than usual
   - 0 I can't remember

*6. In a dice game, would you expect to do better
   - H Throwing by hand?
   - C Throwing from a cup?
   - — Either way?

7. Suppose you were matching pennies with a very confident person, one who had a reputation of always being a winner, would you
   - 0 Expect to lose?
   - 2 Think you had the same chance to win that he did?

8. In card games (like Black Jack, Bridge, etc.) do you ever feel that you know what the next card will be, where a specific card is, or what your opponents are holding?
   - 2 Often
   - 0 Seldom or never

* No numerical score assigned.

9. Does having people watch you play a game influence your feeling about winning?
   0 Often
   2 Seldom or never

10. You're playing the slot machine and win $3.00 on the 2nd play. Would you
   0 Quit?
   2 Keep on playing?

PART 2

How do you feel about your chances of success or failure in the following games? Use these notations:

WW—Strong expectation of winning
W—Slight expectation of winning
L—Slight expectation of losing
LL—Strong expectation of losing

(Check each blank regardless of whether or not you have actually played the game.)

———Dice	———Black Jack
———Roulette	———Punch Boards
———Slot machines	———Cut for high cards
———Bingo	———Wheel of fortune
———Matching pennies	———Chances

Key: WW = +2
W = +1
L = −1
LL = − 2

PART 3

The following list of games and sports is to be checked in two ways: in terms of how often you've played and how often you've won.

Game or Sport	How Often Have You Played?			Usual Outcome? (Check Only Games Played)		
	Often	Occas-ionally	Never	Win	About break even	Lose
1. Dice						
2. Matching pennies						
3. Cut for high card						
4. Black Jack						
5. Slot machines						
6. Chances (on cars, etc.)						
7. Horse races, etc.						
8. Poker						
9. Gin rummy						
10. Pitching pennies						

Part 1_____

Part 2_____

Part 3_____

Total:

Name:_____ Date:_____

Address:_____

_____

_____

KEY:

Often win = +4
Occasionally win = +3
Often break even = +0
Occasionally break even = +0
Never play = 0
Occasionally lose = −3
Often lose = −4

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THE CASE FOR PSYCHOKINESIS[1]

By J. G. Pratt

Introduction

Perception and motor action are two functions that are closely associated with each other. In the normal individual, perception guides motor adaptation, and action without perception is only so much motion.

Ordinarily, of course, we think of perception as involving the sense organs, and of motor reaction as depending upon the use of the muscles. But the evidence reviewed in the preceding paper by Dr. Murphy indicates that information is sometimes acquired without the use of the senses. Because of the interdependence of perception and response in ordinary behavior, the experimental establishment of ESP suggested that there might be a corresponding capacity of thought processes to exert a direct influence on physical systems.

Clairvoyance, for example, can be described as a direct influence of matter upon mind. Might there not be a reciprocal capacity—an effect of mind upon matter? The laboratory evidence for ESP gave a hint, at least, of the occurrence of psychokinesis.

But the PK hypothesis did not originate through logical considerations alone. There are on record many spontaneous occurrences which appear to indicate that PK may be a natural, even though rare, basis of experiences in everyday life. These spontaneous occurrences which pose the question of PK are not so common as those which seem to be manifestations of ESP. But they are sometimes impressive in nature and they are sufficiently numerous

[1] This paper is adapted from one of the same title which was presented at the Third Annual Meeting of the Canadian Federation of Biological Societies at the University of Manitoba, Winnipeg, on June 9, 1960. The occasion was a symposium on parapsychology sponsored by the Canadian Physiological Society, and the program consisted of a paper by Dr. Gardner Murphy on "The Investigation of Extrasensory Perception" followed by this survey of the evidence for psychokinesis. The author wishes to express his appreciation to the Society, particularly to Prof. J. Doupe and Dr. R. J. Cadoret, and to the Parapsychology Foundation which provided funds to cover travel expenses.

to deserve attention as the raw stuff of experience and observation to which the research in PK is related.

These unexplained physical happenings with an apparent psychological aspect range from isolated occurrences such as a picture falling from the wall or a clock stopping at the time of a death to recurrent physical disturbances of the sort popularly referred to as poltergeists and unexplained physical effects associated with rare individuals. Such happenings have received a large amount of serious study in the past, but they have not provided the necessary basis for a scientific conclusion. Rather, they serve to raise and to keep open the question of whether man might possess an ability for psychokinesis. At the same time, however, efforts to study them showed that a different kind of evidence, based upon an experimental approach, would be required to answer this question.

I shall be concerned with the experimental evidence for PK which has been produced over the past 25 years. In preparing this paper, I listed the periodical literature on PK.[2] This list, still not complete, contains 74 reports on original research, 11 papers presenting new evidence based upon further analyses of existing data, and 23 reviews or discussions of the PK problem. It is obvious that I will not be able to communicate all of the details. Rather, my aim will be to give you an introductory impression of the nature and strength of the experimental case for PK.

Experimental Establishment of PK

There is, as I have already pointed out, a close logical and psychological link between ESP and PK. Yet, by 1934, the experimental study of ESP already had a long history, while very little had been done toward bringing the investigation of the PK hypothesis into the laboratory. After the publication of his ESP monograph in that year, Dr. J. B. Rhine thought the time had come for trying to deal experimentally with the PK hypothesis. But what method should one choose for undertaking such a study? Dr. Rhine credits the answer to this question to a casual visitor who claimed that he could successfully will dice to fall so that they would give winning numbers. This confident boast brought to mind the fact

[2] This list is reproduced at the end of the paper.

that many experienced players of the game of craps feel that they are sometimes able to control the dice.

Would the ancient and simple gaming die provide a suitable means of experimentally testing PK? Dr. and Mrs. Rhine, using themselves and a few friends and students as subjects, set out to find the answer empirically. The first tests were made by throwing two dice for designated sums of the uppermost faces: high dice (8 or more); low dice (6 or fewer); or sevens. The first work was exploratory, and the dice were thrown under a variety of circumstances. Some of the trials were made as in ordinary dice games: the cubes were shaken in cupped hands and rolled upon a blanketed surface or bounced off a vertical barrier before they came to rest. For other tests, the dice were shaken in a cup before they were thrown. In still others, the dice were rolled down an inclined chute onto a horizontal table or floor area.

These first PK tests yielded results that were highly significant statistically. The subjects obtained only a slight average excess of the designated target, but this success was maintained over a large number of throws and the odds against chance were very great. While the experimenters had confidence in their own observations and recording, they wanted the results confirmed before publishing such startling findings. Dr. Rhine therefore quietly informed a few people about the results and encouraged them to undertake PK tests. Several of them did so.

This stage of quiet research on the PK hypothesis lasted from 1934 through 1942. Very early during this period, variations in testing procedure were made. For example, some subjects preferred to try to get as many as possible of a designated target face. This kind of test was more adaptable than that based on the sum of two faces, since it allowed the subject to throw any number of dice at the same time. Tests were actually made with from one to 96 or more dice per throw. Adequate safeguards were introduced to control against physical bias of the dice by throwing equally for every face, and machines were introduced to provide automatic throwing, which eliminated all handling of the dice.

Most of the series which were done yielded statistically highly significant results. As the experiments were completed, the results

were noted in terms of the overall scores, and the records were added to the files of accumulating PK evidence. This process continued over the eight-year period before the experimenters felt that the degree of confirmation justified publication of the results.

Then, in the course of re-examining the data preparatory to reporting the findings, a new type of internal evidence was discovered which provided a clear-cut basis for the exclusion of counter-hypotheses to PK even in the more exploratory series. This evidence was the discovery of rhythmic changes in the level of success in relation to the subject's progress through the PK test. More specifically, it was found that as the subjects had worked their way through the assigned trials to be recorded on the record page their success had varied in a systematic way.

No one had anticipated or noticed any regular variation in performance while the separate series were being conducted. Consequently, no one gave any thought to position effects. It may therefore be said that neither the experimenters nor the subjects were consciously motivated in one part of the record page more than in another. The position effects made it possible to consider as evidence for PK the results of even the more informal exploratory experiments, such as those in which subjects made their choice of targets instead of throwing equally for each face of the die. Even though the six-face, say, was used as target throughout an experiment, a statistical test based upon the difference between the scores in two different sections of the record page would be free of any possible effect of physical bias in the die. The six-face would not be favored during the throws made at one particular moment while being disfavored in the throws occurring at the next moment.

What were the unexpected position effects found in the PK records? When the first series was being re-analyzed, it was observed that there was a general decline of success between the top half and the bottom half of the record page. Similarly, there was a decline of success between the data recorded in the lefthand columns of the page and those recorded in the righthand columns. As a means of getting a statistical test of these two trends, the page was divided into four equal quarters by means of horizontal and vertical center lines. Then a statistical evaluation was applied to the differ-

ence in the hits scored in the upper left and the lower right quarters of the page. This statistical test was labeled the "quarter distribution" or QD analysis.

Having discovered a decline effect in the first records examined, the experimenters proceeded to apply the QD analysis to all of the series in the files. A total of 18 separate experimental series were found to be suitable for evaluation by this method.

In 12 of these series the subjects had been throwing for a designated face of the die as target. In all but one of these the QD analysis showed a higher rate of scoring in the upper left quarter than in the lower right quarter of the page. Statistically, a difference as large as that observed between the total score of the upper left quarter for all 12 series and that of the lower right would be expected on the basis of random sampling about three times in a hundred million such sets of data.

The other six series were experiments in which the subjects threw a pair of dice for a designated sum of the two faces. The QD results revealed in this case as well that in all but one series the upper left quarter had given a higher score than the lower right. Here the difference between the total scores had the probability of chance occurrence of less than 1 time in 150.

The QD results for the PK record page were discovered and reported by J. B. Rhine and B. M. Humphrey of the Duke Parapsychology Laboratory. Recognizing this evidence as crucial for the PK hypothesis, they issued an invitation to any qualified scientists to come and recheck the results for themselves. When no one else accepted the invitation, I myself took the opportunity. Although I was a member of the staff, I was not at the laboratory when these analyses were made, and thus I was qualified to make a completely separate recheck. In the time available, I was able to re-analyze completely the 10 out of the 18 series which contributed the most to the statistical significance of the complete QD analysis. A few minor errors of tabulation were found, but these did not make any appreciable difference in the results. Thus my own findings verified the Rhine and Humphrey report.

The QD analysis was carried through two further stages to see if the decline effect was present in structured units of the records

smaller than the page. The final stage was one that was completely independent statistically of the results that had already been found. This was a study involving the quartering of record units lying wholly within the four quarters of the page, a sort of quarter distribution analysis of the original page quarters.

Out of the original 18 series, only 8 were found to lend themselves to this third QD study. These showed the predicted decline effect. In the series in which a designated target face was the objective, the difference between the first and fourth quarters gave a P-value of .0005; in the section involving high-dice and low-dice results from a pair, this difference yielded a probability of .00043. A combination of these two results by Fisher's method yields the probability value of .000005.

So far in this paper I have restricted the statistics to a few crucial probability values. But I should like to mention here two other figures—figures which show the truly impressive scope of the work involved in this research effort. The 12 series for target faces analyzed in the QD studies contained a total of nearly 700,000 die readings. The six series in which a pair of dice were thrown for a specified sum of the two faces contained a total of just over 37,000 readings of the two dice.

In March, 1946, Dr. Rhine published an article surveying the PK evidence as it appeared at that time. The case for PK was conclusive—as conclusive, at least, as it could be on the basis of work largely centered in or directed from one laboratory. The publication of this survey of the evidence marked the end of the first stage of PK research. From this point on, the hypothesis had scientific status, commanding the close attention of research workers in parapsychology. The emphasis shifted to the question of confirmation of the evidence by investigators in other research centers.

Independent Confirmations of PK

Since 1945, there have been many confirmatory PK experiments, but I will be able to present only the basic details regarding three of them at this point and of a fourth one near the end of the next section.

In 1946, L. A. Dale reported in the *Journal of the American Society for Psychical Research* a PK experiment which she had

conducted as the research officer of that organization. The experiment was rigorously planned from the outset to guard against conceivable non-PK factors. Each of 54 college students who were used as subjects was present for a single session in which 96 diethrows were made for each of the six faces of the die in turn. The dice were shaken in a cup and poured into the open upper end of a three-foot inclined plane. After falling under the force of gravity, the dice spread out over an enclosed horizontal surface at the bottom. Both the incline and the target area were covered with glass. The experimenter and the subject independently observed and recorded the upper faces of the dice after each trial. In case of any discrepancy between the two records, the lower score was counted. Since the experiment as a whole gave a positive deviation, errors were thus interpreted on the safe side.

The trials for each target face were recorded on a separate record sheet in four columns, two at the top of the sheet and two near the bottom. As planned before the experiment was begun, tests for significance were applied to the total deviation of successes from mean chance expectation and to position effects among the four columns on the page. The 31,104 die readings of the total experiment yielded a positive deviation of 171 hits. This is significant, with a probability of .005. There was also a regular decline among the four columns on the page. Taking them in order, the deviations were +100, +55, +12, +4. The difference between the first and fourth columns is of marginal significance, with $P = .04$. The position effects follow closely the pattern of those reported for previous series. On the basis of the total deviation and position effects, this work confirmed the earlier PK results.

Another formal effort to repeat the PK results was made in the Department of Biophysics of the University of Pittsburgh. This experiment by McConnell, Snowdon, and Powell was reported in the *Journal of Experimental Psychology* in October, 1955, though the work itself was completed a few years earlier.

The experiment involved the making of about 170,000 diethrows by 393 subjects, and the research extended over a period of approximately 18 months.

Each subject made throws of two dice to complete three record sheets of six columns each, three across the top of the page and three across the bottom. For the first page the dice were shaken and thrown from a roughened cup into a padded tray. For the other two pages the dice were thrown by an automatically-operating electrical apparatus, and the results were recorded photographically after each throw as well as by the experimenter. The automatic photographic recording of the dice made it possible to recheck the scores from the films and thus to find any errors in the experimenters' records.

The investigators planned to analyze their results in terms of both the total score and position effects. The total score of the experiment was not significantly different from chance expectation, but the analysis for a decline effect within the page revealed a drop in performance which was significant, with a probability of .002.

The third example of a confirmatory experiment was one conducted by G. W. Fisk and D. J. West in England with a selected high-scoring PK subject. An unusual feature about this work was the fact that the subject was not informed which face of the die was the target for any given set of trials. Thus the entire experiment involved a condition which Dr. R. H. Thouless had earlier introduced in his PK research—the subject's success depended upon using ESP to get the target and PK to make the dice fall to match it.

In the first series of tests, done in 1951-52, Mr. Fisk selected at random each day a digit from 1-6 as the target face and pinned this number on the wall of his study in Surrey, England. During the course of the day, the subject in her own home a number of miles distant threw the dice to match the unknown target. Throughout the course of the series, the subject completed 10,000 trials in which she scored 117 more hits than chance expectation. This result yields a probability value of .0016.

In three further series with this subject, consistently positive scores were obtained under similar conditions of working (requiring both ESP and PK). These further results (15,032 trials with a positive deviation of 172) were significant, with a probability level of .00017.

The three experiments chosen as examples of independent confirmations were selected on the basis of the adequacy of the ex-

perimental conditions, not because of the results. In fact, a number of other series could be cited which reached higher levels of statistical significance. But on the basis of both the safeguards imposed and the results obtained, these three should offer reassurance to any open-minded scientist who might have wondered whether the case for PK rested on work done in the laboratory from which the discovery was first announced.

PK Placement

In 1951, W. E. Cox reported an experiment in which subjects attempted to use PK on a tumbling die in two ways simultaneously: one, to get designated target faces; and secondly, to make the dice stop on those squares on a checkerboard surface which were marked with the target-face number. Both the target-face data and the placement data were statistically significant.

This beginning on the investigation of PK placement was followed up by other investigators, and the results of two other researches were published in the *Journal of Parapsychology* simultaneously with the Cox report. One was the work of Mr. Haakon Forwald, an engineer in Sweden.

Since 1951, Forwald has been the most active investigator of PK placement. By the end of 1957, eight reports on his research had been published. In this work the investigator, serving as his own subject, mechanically released cubes to roll down an inclined plane and spread out on a horizontal throwing surface. A center line divided the horizontal surface into equal right- and lefthand areas. The subject's aim was to influence the falling objects to stop on the side designated as the target.

During the first series, the results were scored only in terms of the division of objects between the target and non-target sides. The two sides were used as target the same number of times, and thus any physical bias in the apparatus was controlled. Nevertheless, the number of objects falling within the target area was highly significant.

Forwald then introduced a simple change in his apparatus with the purpose of achieving a more sensitive measure of the PK placement effect. He drew lines parallel to the center line of the table at

one centimeter intervals and numbered them to provide a scale. Thereafter the cubes were scored to show the actual degree of displacement.

The experimenter released six cubes on each trial and 10 releases were recorded together as a set, the first five for the righthand or *A*-side of the table as target and then five for the lefthand or *B*-side. The data were evaluated by a Student's *t*-test of the difference between the cube distribution when *A* was target and that for *B* as target.

As Forwald continued his research, two general facts became clear. One was that he was getting, with almost marvelous regularity, an effect upon the placement of the dice in the direction of his wishes. The second was that this effect was not uniformly distributed throughout the set, but it was concentrated in the first throw of the set for each target side. As evidence that something more than chance was operating, his data were unequivocal. Because the placement effect was concentrated in the first throw of the set, it became standard procedure to single these results out for separate analysis.

Parapsychologists have long been subjected to criticisms not encountered by scientists in other fields. When any investigator working alone has obtained significant results, it has been commonplace to hear that he could have made errors of observation and recording and thus have deceived himself. To forestall such criticism, it was necessary for Forwald to repeat his tests in the presence of a witness and independent recorder.

This need was met in the fall of 1957 during a visit by Forwald to the Duke Parapsychology Laboratory. The purpose of the visit was tacitly understood but not overtly stressed. It was recognized that any PK subject would be placed at a psychological disadvantage if he felt "put on the spot." Consequently, we were interested to approach the crucial stage of his visit by slow degrees.

As a starting point Forwald worked through two series entirely alone as he had done in Sweden. These series gave significant results for the first throw of the set (the basis of the statistical test, selected in advance on the strength of Forwald's previous work), with P-values of .007 and .017.

He then tried repeating this success when a member of the laboratory staff was assigned as an independent observer and recorder. Two series done under this condition were totally without statistical significance.

In the next stage, three different members of the laboratory staff in separate series participated as *co-subject* as well as independent observer and recorder. With one of these laboratory members, Mr. Forwald's results were significant, with the P-value of .006. Up to this point the results were merely exploratory as far as the real purpose of the visit was concerned.

Finally, plans were made for a confirmatory test set up on the basis of the work done up to that point. In this test, Mr. Forwald had as his co-subject the member of the laboratory with whom he had previously worked successfully in this capacity in an exploratory series. This member of the laboratory also made an independent record of the cubes. The two records were compared on the spot and agreement was reached before the cubes were disturbed. The results reached a level of significance represented by a P-value of .0002. Thus, in spite of the psychological difficulties which had to be overcome, a confirmation of this subject's abilities was obtained under conditions excluding subjective errors of observation and recording.

But Forwald's objective in his work as a whole has not been limited to piling up more and more evidence for a PK placement effect. Almost from the beginning of his research, he has been trying to gain some insight into the dynamics of the PK process. He has, for example, compared cubes of different kinds of materials, weights, roughness, and surface coatings. At the same time, he has worked out mathematical formulas for converting the effect obtained (taking into account the relevant aspects both of the cube movements and of the cubes themselves) into the physical energy equivalents for bringing about the result. It is too soon to attempt to make any general scientific evaluation of these research efforts, since they are still at an early stage of development. I mention them only as an indication of the fact that the investigators of the PK effect are aware of the need of finding ways of relating this function to more familiar scientific principles. Parapsychologists not only want to know whether PK occurs; as soon as this conclusion is reached,

they turn to the much more difficult task of trying to learn something about the nature of the effect.

Other investigators have also continued to contribute to the study of the PK placement effect during the past decade. There has been further research from Mr. Cox, who was the originator of this type of test, as well as by others whom I will not have time to mention here. But thus far it is the work of Mr. Forwald which stands out in this area, and it is work which presents some very challenging questions for future investigators of PK.

Concluding Remarks

The emphasis in this paper has been placed on evidence for the occurrence of PK. This seemed appropriate, because the establishment of a direct, extramuscular influence of subjective factors upon physical systems would—even more than perception independently of the senses—have revolutionary implications for psychology and biology. The general acceptance of the PK effect would require a reorientation of scientific thinking regarding the nature of the organism—a reorientation in which the influence of mental factors would be recognized *in fact* and not in name only. But I need not, before a group of biological scientists, dwell on the importance of the discovery that thought processes have real force.

But something should be said regarding the secondary problems —questions about the nature of PK—which have received some attention in the research. A start has been made toward finding out whether the PK effect is limited by the space and mass aspects of the physical situation. Thus far, no differences have been found in relation to the number, mass, shape, and distance of the objects the subject was attempting to influence. Also, a range of types of objects have been used with apparent success, including dice and cubes, coins and other discs, spheres, roulette, a spinning pointer, and the swimming of paramecia. On many of these points the present results are inadequate for final conclusions, but the findings encourage further explorations in search of the scope and limits of PK in relation to the physical world.

Some progress has also been made on the investigation of the psychology of PK. Motivation has been found to be a factor of

paramount importance. Subjects who succeeded in their first series of tests have often failed in later efforts to demonstrate their PK abilities: the excitement and eager curiosity which marked their first experience could not be recaptured. Thus investigators have learned that success in a test for PK—as with ESP—is not to be taken for granted. In general, successful replication of experiments has been found to be as difficult for PK as for ESP. Even when successful subjects have been performing at their best average level, a trial-by-trial analysis of their scoring rate has revealed high peaks of PK influence separated by valleys of chance results within the test structure.

The findings of parapsychology form but a beachhead on a new continent of the natural order. The facts with which I have been dealing show that PK, like ESP, is a part of that beachhead. The uncertainties in the situation are not concerned with the evidence for the occurrence of the phenomena, for it is clear that a landing has been made and a foothold secured. They relate, rather, to what we will find as we extend our lines of exploration and discovery. They are the challenge to further research.

Periodical Literature

Averill, R. L., and Rhine, J. B. The effect of alcohol upon performance in PK tests. *J. Parapsychol.*, 1945, **9**, 32-41.

Binski, S. R. Report on two exploratory PK series. *J. Parapsychol.*, 1957, **21**, 284-95.

Cox, W. E. The effect of PK on the placement of falling objects. *J. Parapsychol.*, 1951, **15**, 40-48.

———. A comparison of spheres and cubes in placement PK tests. *J. Parapsychol.*, 1954, **18**, 234-39.

———. Three-tier placement PK. *J. Parapsychol.*, 1959, **23**, 19-29.

Dale, L. A. The psychokinetic effect: the first A.S.P.R. experiment. *J. Amer. Soc. psych. Res.*, 1946, **40**, 123-51.

Dale, L. A., and Woodruff, J. L. The psychokinetic effect: further A.S.P.R. experiments. *J. Amer. Soc. psych. Res.*, 1947, **41**, 65-82.

Fahler, J. Exploratory "scaled" PK placement tests with nine college students with and without distance. *J. Amer. Soc. psych. Res.*, 1959, **53**, 106-113.

Fisk, G. W., and West, D. J. Psychokinetic experiments with a single subject. *Newsletter of the Parapsychology Foundation*, November-December, 1957.

———. Dice-casting experiments with a single subject. *J. Soc. psych. Res.*, 1958, **39**, 277-87.

Forwald, H. A further study of the PK placement effect. *J. Parapsychol.*, 1952, **16**, 59-67.

———. A continuation of the experiments in placement PK. *J. Parapsychol.*, 1952, **16**, 273-83.

———. Chronological decline effects in a PK placement experiment. *J. Parapsychol.*, 1954, **18**, 32-36.

———. PK placement and air currents. *J. Parapsychol.*, 1954, **18**, 41-42.

———. An approach to instrumental investigation of psychokinesis. *J. Parapsychol.*, 1954, **18**, 219-33.

———. Experiments with alternating PK placement and control tests. *J. Parapsychol.*, 1955, **19**, 45-51.

———. A study of psychokinesis in its relation to physical conditions. *J. Parapsychol.*, 1955, **19**, 133-54.

———. A continuation of the study of psychokinesis and physical conditions. *J. Parapsychol.*, 1957, **21**, 98-121.

———. An experimental study suggesting a relationship between psychokinesis and nuclear conditions of matter. *J. Parapsychol.*, 1959, **23**, 97-125.

Gatling, W., and Rhine, J. B. Two groups of PK subjects compared. *J. Parapsychol.*, 1946, **10**, 120-25.

Gibson, E. P. Note on an impromptu experiment in psychokinesis. *J. Amer. Soc. psych. Res.*, 1947, **41**, 22-28.

———. An exploratory PK experiment based upon throwing twenty-four dice. *J. Parapsychol.*, 1948, **12**, 289-97.

Gibson, E. P., Gibson, L. H., and Rhine, J. B. A large series of PK tests. *J. Parapsychol.*, 1943, **7**, 228-37.

———. The PK effect: mechanical throwing of three dice. *J. Parapsychol.*, 1944, **8**, 95-109.

Gibson, E. P., and Rhine, J. B. The PK effect: III. Some introductory series. *J. Parapsychol.*, 1943, **7**, 118-34.

Greene, F. M. The feeling of luck and its effect on PK. *J. Parapsychol.*, 1960, **24**, 129-41.

Herter, C. J., and Rhine, J. B. An exploratory investigation of the PK effect. *J. Parapsychol.*, 1945, **9**, 17-25.

Hilton, H., Jr., Baer, G., and Rhine, J. B. A comparison of three sizes of dice in PK tests. *J. Parapsychol.*, 1943, **7**, 172-90.

Hilton, H., Jr., and Rhine, J. B. A second comparison of three sizes of dice in PK tests. *J. Parapsychol.*, 1943, **7**, 191-206.

Humphrey, B. M. Help-hinder comparison in PK tests. *J. Parapsychol.*, 1947, **11**, 4-13.

———. Simultaneous high and low aim in PK tests. *J. Parapsychol.*, 1947, **11**, 160-74.

Humphrey, B. M., and Rhine, J. B. Position effects in the large Gibson series. *J. Parapsychol.*, 1943, **7**, 238-51.

———. PK tests with two sizes of dice mechanically thrown. *J. Parapsychol.*, 1945, **9**, 124-32.

Humphreys, L. G. Note on "Wishing with Dice." *J. exp. Psychol.*, 1956, **51**, 290-92.

Knowles, E. A. G. Report on an experiment concerning the influence of mind over matter. *J. Parapsychol.*, 1949, **13**, 186-96.

Lossky, N. Extrasensory perception and psychokinesis: an explanation in terms of intuitivist epistemology and personal metaphysics. *J. Soc. psych. Res.*, 1952, **36**, 702-708.

Mangan, G. L. A PK experiment with thirty dice released for high- and low-face targets. *J. Parapsychol.*, 1954, **18**, 209-218.

McConnell, R. A. Why throw dice? *J. Parapsychol.*, 1952, **16**, 187-91.

———. Remote night tests for PK. *J. Amer. Soc. psych. Res.*, 1955, **49**, 99-108.

———. Further comment on "Wishing with Dice." *J. Parapsychol.*, 1958, **22**, 210-15.

McConnell, R. A., Snowdon, R. J., and Powell, K. F. Wishing with dice. *J. exp. Psychol.*, 1955, **50**, 269-75.

McMahan, E. PK experiments with two-sided objects. *J. Parapsychol.*, 1945, **9**, 249-63.

———. A PK experiment with discs. *J. Parapsychol.*, 1946, **10**, 169-80.

———. A PK experiment under light and dark conditions. *J. Parapsychol.*, 1947, **11**, 46-54.

Mitchell, A. M. J., and Fisk, G. W. The application of differential scoring methods to PK tests. *J. Soc. psych. Res.*, 1953, **37**, 45-60.

Mundle, C. W. K. The experimental evidence for PK and precognition. *Proc. Soc. psych. Res.*, 1949-52, **49**, 61-78.

Nash, C. B. PK tests of a large population. *J. Parapsychol.*, 1944, **8**, 304-310.

———. Position effects in PK tests with twenty-four dice. *J. Parapsychol.*, 1946, **10**, 51-57.

———. Psychokinesis reconsidered. *J. Amer. Soc. psych. Res.*, 1951, **45**, 62-68.

———. The PK mechanism. *J. Soc. psych. Res.*, 1955, **38**, 8-11.

———. An exploratory analysis for displacement in PK. *J. Amer. Soc. psych. Res.*, 1956, **50**, 151-56.

Nash, C. B., and Forwald, H. Discussion of interpretation of Forwald's PK placement results. *J. Parapsychol.*, 1956, **20**, 53-58.

Nash, C. B., and Richards, A. Comparison of two distances in PK tests. *J. Parapsychol.*, 1947, **11**, 269-82.

Nicol, J. F., and Carington, W. Some experiments in willed die-throwing. *Proc. Soc. psych. Res.*, 1947, **48**, 164-75.

Osis, K. A test of the relationship between ESP and PK. *J. Parapsychol.*, 1953, **17**, 298-309.

Pope, D. H. Bailey's comparison of a coin and a die in PK tests. *J. Parapsychol.*, 1946, **10**, 213-15.

Pratt, J. G. A reinvestigation of the quarter distribution of the (PK) page. *J. Parapsychol.*, 1944, **8**, 61-63.

———. Lawfulness of position effects in the Gibson cup PK series. *J. Parapsychol.*, 1946, **10**, 243-68.

———. Target preference in PK tests with dice. *J. Parapsychol.*, 1947, **11**, 26-45.

———. Dice bias and manner of throwing. *J. Parapsychol.*, 1947, **11**, 55-63.

———. Rhythms of success in PK test data. *J. Parapsychol.*, 1947, **11**, 90-110.

———. Restricted areas of success in PK tests. *J. Parapsychol.*, 1947, **11**, 191-207.

———. The meaning of performance curves in ESP and PK test data. *J. Parapsychol.*, 1949, **13**, 9-22.

———. The Cormack placement PK experiments. *J. Parapsychol.*, 1951, **15**, 57-73.

Pratt, J. G., and Forwald, H. Confirmation of the PK placement effect. *J. Parapsychol.*, 1958, **22**, 1-19.

Pratt, J. G., and Woodruff, J. L. An exploratory investigation of PK position effects. *J. Parapsychol.*, 1946, **10**, 197-207.

Price, M. M., and Rhine, J. B. The subject-experimenter relation in the PK test. *J. Parapsychol.*, 1944, **8**, 177-86.

Reeves, M. P., and Rhine, J. B. The PK effect: II. A study in declines. *J. Parapsychol.*, 1943, **7**, 76-93.

———. The PK effect: the first doubles experiment. *J. Parapsychol.*, 1945, **9**, 42-51.

Rhine, J. B. Dice thrown by cup and machine in PK tests. *J. Parapsychol.*, 1943, **7**, 207-217.

———. The PK effect: early singles tests. *J. Parapsychol.*, 1944, **8**, 287-303.

———. "Mind over matter," or the PK effect. *J. Amer. Soc. psych. Res.*, 1944, **38**, 185-201.

———. Early PK tests: sevens and low-dice series. *J. Parapsychol.*, 1945, **9**, 106-115.

———. The psychokinetic effect: a review. *J. Parapsychol.*, 1946, **10**, 5-20.

———. Hypnotic suggestion in PK tests. *J. Parapsychol.*, 1946, **10**, 126-40.

———. The Schwartz PK experiment. *J. Parapsychol.*, 1946, **10**, 208-212.

———. The Forwald experiments with placement PK. *J. Parapsychol.*, 1951, **15**, 49-56.

Rhine, J. B., and Humphrey, B. M. The PK effect: the McDougall one-die series. *J. Parapsychol.*, 1943, **7**, 252-63.

———. The PK effect: special evidence from hit patterns. I. Quarter distributions of the page. *J. Parapsychol.*, 1944, **8**, 18-60.

———. PK tests with six, twelve, and twenty-four dice per throw. *J. Parapsychol.*, 1944, **8**, 139-57.

———. The PK effect with sixty dice per throw. *J. Parapsychol.*, 1945, **9**, 203-218.

———. The PK effect: special evidence from hit patterns. II. Quarter distributions of the set. *J. Parapsychol.*, 1944, **8**, 254-71.

———. Position effects in the six-by-six series of PK tests. *J. Parapsychol.*, 1945, **9**, 296-302.

Rhine, J. B., Humphrey, B. M., and Averill, R. L. An exploratory experiment on the effect of caffeine upon performance in PK tests. *J. Parapsychol.*, 1945, **9**, 80-91.

Rhine, J. B., Humphrey, B. M., and Pratt, J. G. The PK effect: special evidence from hit patterns. III. Quarter distributions of the half-set. *J. Parapsychol.*, 1945, **9**, 150-68.

Rhine, L. E. Placement PK tests with three types of objects. *J. Parapsychol.*, 1951, **15**, 132-38.

Rhine, L. E., and Rhine, J. B. The psychokinetic effect: I. The first experiment. *J. Parapsychol.*, 1943, **7**, 20-43.

Richmond, N. Two series of PK tests on paramecia. *J. Soc. psych.* Res., 1952, **36**, 577-88.

Rose, R. Some notes on a preliminary PK experiment with six dice. *J. Parapsychol.*, 1950, **14**, 116-26.

———. Experiments in ESP and PK with aboriginal subjects. *J. Parapsychol.*, 1952, **16**, 219-20.

Steen, D. Success with complex targets in a PK baseball game. *J. Parapsychol.*, 1957, **21**, 133-46.

Thouless, R. H. Some experiments on PK effects in coin spinning. *J. Parapsychol.*, 1945, **9**, 169-75.

———. A method of correcting for dice bias in evaluating PK test data. *J. Parapsychol.*, 1947, **11**, 231-35.

———. A report on an experiment in psychokinesis with dice and a discussion on psychological factors favoring success. *Proc. Soc. psych. Res.*, 1951, **49**, 107-130. Condensed version in *J. Parapsychol.*, 1951, **15**, 89-102.

Van de Castle, R. L. An exploratory study of some personality correlates associated with PK performance. *J. Amer. Soc. psych. Res.*, 1958, **52**, 134-50.

Vasse, P. Expériences de germination de plantes. *Rev. Métapsychique*, New Series No. 12, 223-25, 1950.

Vasse, P., and Vasse, C. A comparison of two subjects in PK. *J. Parapsychol.*, 1951, **15**, 263-70.

Wilbur, L. C., and Mangan, G. L. The relation of PK object and throwing surface in placement tests: I. Preliminary series. *J. Parapsychol.*, 1956, **20**, 158-65.

———. The relation of PK object and throwing surface in placement tests: further report. *J. Parapsychol.*, 1957, **21**, 58-65.

Confirmatory experiments in PK research. (Editorial) *J. Parapsychol.*, 1946, **10**, 71-73.

ESP, PK, and the survival hypothesis. (Editorial) *J. Parapsychol.*, 1943, **7**, 223-27.

ESP and PK as "psi phenomena." (Editorial) *J. Parapsychol.*, 1946, **10**, 74-75.

Independent discoveries of target preference in PK data. (Editorial note) *J. Parapsychol.*, 1948, **12**, 148-50.

The mind has real force! (Editorial) *J. Parapsychol.*, 1943, **7**, 69-75.

"Physical phenomena" in parapsychology. (Editorial) *J. Parapsychol.*, 1943, **7**, 1-4.

A PK experiment at Yale starts a controversy. (Editorial note) *J. Amer. Soc. psych. Res.*, 1952, **46**, 111-17.

The PK research at the point for decision! (Editorial) *J. Parapsychol.*, 1944, **8**, 1-2.

Significance of the PK effect. (Editorial) *J. Parapsychol.*, 1943, **7**, 139-43.

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THE EFFECT OF SUBJECT-EXPERIMENTER ATTITUDES ON CLAIRVOYANCE SCORES[1]

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ABSTRACT: The purpose of this research was to discover whether the attitudes of subjects and experimenters toward each other would affect scores in some group card tests of clairvoyance when the subjects and experimenters were college students. Nine students in a course in parapsychology took part, each having two separate sessions as experimenter while the other eight acted as subjects. The attitudes were determined by having each subject and the experimenter at every session list four of the other eight students whom he preferred as members of the class. The subject (or experimenter) was considered to have a "positive" attitude toward those he listed, and a "negative" attitude toward the others. When the data were divided on the basis of attitude in accordance with the objective of the experiment, the results followed the trend of research by other experimenters along the same lines. That is, positive scoring was associated with positive attitudes and negative scoring with negative attitudes, the subject's attitude exerting a greater effect than the experimenter's. There was a statistically significant difference between the positive scores obtained by the subjects who were "positive" toward the experimenter and the negative scores by those who were "negative." The difference between the scores when the subject and experimenter were mutually positive toward each other and when they were mutually negative, combining both general factors, was statistically even more significant in spite of the reduced amount of data. The results were consistent when analyzed in terms of individual subjects within each session and throughout the series.—Ed.

INTRODUCTION

IN CLAIRVOYANCE tests with secondary and primary school students in which the teachers served as experimenters, Anderson and White (1, 2, 3) found that pupils who liked their teacher gave significantly higher scores than those who did not and that pupils liked by their teacher gave significantly higher scores than pupils who were disliked. They also found that changes in the attitude of the students to their teacher were related to changes in the clairvoyance level (4). The purpose of the present experiment was to determine whether the attitude of subject and experimenter toward each other when both are college students has an effect on the scoring level.

[1] This research was supported by a grant from the Parapsychology Foundation, Inc. The paper was presented at the third annual convention of the Parapsychological Association in New York City, Sept. 8-10, 1960.

Procedure

The nine students in a course in parapsychology given by the writer at St. Joseph's College participated in the experiment, which was performed during the course from October, 1958, to January, 1959. The students were informed that the purpose of the experiment was to determine whether the attitude of the experimenter and the subject toward each other has an effect on the clairvoyance scoring level. Each student served as experimenter for two sessions, the other eight students participating as subjects for these sessions. Not more than one session was performed per meeting of the class. The session consisted of one run per subject, making eight runs, of 20 trials each, performed simultaneously by the eight subjects. The experimental length of 18 sessions and 144 runs was determined in advance.

The targets were the ESP card symbols written in standard shorthand form in two columns of 10 each on ruled 2″ x 5″ cards. The targets were made up from a table of random numbers by an assistant. Each of the cards on which the 20 targets were written was enclosed in a separate opaque envelope and the order of the targets remained unknown to the writer and the nine students during the session. There was a separate target card with a different set of targets for each subject.

The student experimenter for each session volunteered for the task, with the restriction that every student should have completed one session as experimenter before any served in this capacity a second time. The student experimenter described the test procedure to the subjects and gave each subject a target card enclosed in an opaque envelope and a similar blank call card on which to record his guesses. On the back of the call card, the subject listed the four of his fellow students he preferred as members of the class. If the experimenter's name was listed, the subject was considered to have a "positive" attitude toward him. If not, the subject's attitude toward the experimenter was considered to be "negative." This distinction is only a relative one, of course, since the subjects (and "experimenters") were restricted to naming exactly four members as the ones they preferred. Next, the subject wrote on the front of the call card his name and the date and the 20 symbols he be-

lieved to be on his target card. The student experimenter listed on the back of a similar card the four of his fellow students he preferred as members of the class. This served as an index of the experimenter's attitude toward the subject. Without exposing the backs of the call cards, the experimenter collected the test material and gave it to the writer, who had retired to the back of the room before the test. After class, the writer marked the hits and made the results known at the next class meeting. At a later date the data were divided on the basis of attitudes. Both the clairvoyance scores and the attitude results were independently checked, with the second checker having no indication of the results found by the first.

Results

In accordance with the purpose of the experiment, the data were first divided on the basis of the experimenter's attitude toward the subject and the subject's attitude toward the experimenter. The results are presented in Table 1. The upper half of the table shows how the subjects scored when they were positive or negative in their attitudes toward the experimenters. The bottom half shows how the subjects scored when the experimenters were positive or negative toward them. Since there were 20, rather than the usual 25, calls in each run, the expected chance average for the run is 4.00 instead of 5.00. The CR of the difference between a positive and a negative attitude of the subject toward the experimenter is 2.56 ($P = .0105$), which is significant. The CR of the difference between a positive and a negative attitude of the experimenter toward the subject is 1.63, which, while not significant, is suggestive. In both instances positive scoring was obtained in connection with positive attitudes and negative scoring with negative attitudes, which is in line with the Anderson-White findings.

The data are presented in Table 2 with respect to the two chronological halves of the experiment, one half of the data consisting of the first run, or session, of each subject-experimenter relationship and the second half consisting of the second run. In both halves of the experiment, positive scoring was obtained in connection with positive attitudes and negative scoring with negative attitudes.

Table 1

SUBJECTS' ESP SCORE LEVELS AS RELATED TO ATTITUDE OF SUBJECT AND EXPERIMENTER TOWARD EACH OTHER

Attitude		No. of Subjects' Runs	Av. Run Score	Dev.	CR_d (Pos. Attitude—Neg. Attitude)
Subject toward experimenter	Positive	76	4.42	+32	2.56 (P=.0105)
	Negative	68	3.66	−23	
	Total	144	4.06	+ 9	
Experimenter toward subject	Positive	72	4.31	+22	1.63 (P=.1)
	Negative	72	3.82	−13	
	Total	144	4.06	+ 9	

While this relationship for the subject's attitude toward the experimenter is more pronounced in the first half of the experiment than in the second half, the difference is not significant. There is no appreciable difference in the effect of the experimenter's attitude toward the subject between the two halves of the experiment.

The data were separated further with respect to the reciprocal attitude of subject and experimenter, as was done in the Anderson-White studies. That is, those cases were selected out in which the subject and experimenter both felt the same way toward each other,

Table 2

SUBJECTS' ESP SCORES DIVIDED ACCORDING TO SUBJECT AND EXPERIMENTER ATTITUDE AND FIRST AND SECOND HALF OF EXPERIMENT

Attitude		First of Two Runs			Second of Two Runs		
		No. of Subjects' Runs	Av. Run Score	Dev.	No. of Subjects' Runs	Av. Run Score	Dev.
Subject toward experimenter	Positive	39	4.64	+25	37	4.19	+ 7
	Negative	33	3.42	−19	35	3.89	− 4
Experimenter toward subject	Positive	36	4.33	+12	36	4.28	+10
	Negative	36	3.83	− 6	36	3.81	− 7

Table 3

SUBJECTS' ESP SCORING LEVELS WHEN SUBJECT AND EXPERIMENTER HAD SAME ATTITUDE TOWARD EACH OTHER

	EXPERIMENTER'S ATTITUDE POSITIVE			EXPERIMENTER'S ATTITUDE NEGATIVE		
	No. of Runs	Av. Run Score	Dev.	No. of Runs	Av. Run Score	Dev.
Subject's Attitude Positive...	37	4.73	+27	39	4.13	+ 5
Subject's Attitude Negative...	35	3.86	− 5	33	3.45	−18

CR_d (Sub.-Exp. Positive and Sub.-Exp. Negative) = 3.01 (P = .003)

and the scoring for the mutually positive group was compared with the scoring for the mutually negative group. The results, as given in Table 3, show that, again, the scoring was above the chance average when the attitudes were mutually positive, and below when they were mutually negative. The CR of the difference between a positive and a negative subject-experimenter reciprocal attitude is 3.01 (P = .003).

Each student, it will be remembered, acted as experimenter in two different sessions. In order to determine the effect of change of attitude, the data for the subject-experimenter pairs in which the attitude of the subject or of the experimenter differed in the two sessions are presented in Table 4. The average length of time between the two sessions was 50 days. In 18 of the 72 subject-experimenter relationships, the subject's attitude toward the experimenter was positive in one of the two runs and negative in the other. In 12 subject-experimenter relationships, the experimenter's attitude toward the subject was positive in one run and negative in the other. In only one of the relationships did the subject and experimenter have a mutually positive attitude in one run and a mutually negative attitude in the other. Examination of Table 4 shows that change of attitude was accompanied by a similar change of clairvoyance scoring level. Although the differences between the average run scores for positive and negative attitudes are not significant, they correspond closely with those in Tables 1 and 3 where the data for all of the 72 subject-experimenter relationships are included.

Table 4

SUBJECTS' ESP SCORING WHEN SUBJECT AND/OR EXPERIMENTER CHANGED ATTITUDES TOWARD EACH OTHER DURING EXPERIMENT

Attitude		No. of Subjects' Runs	Av. Run Score	Dev.
Subject toward experimenter	Positive	18	4.33	+5
	Negative	18	3.61	−7
Experimenter toward subject	Positive	12	4.17	+2
	Negative	12	3.42	−7
Subject-experimenter reciprocal	Positive	1	5.00	+1
	Negative	1	3.00	−1

Thus far the results are presented in terms of attitude groups, and the differences between the group totals are of interest from the point of view of the separation of positive and negative clairvoyance scores and the general evidence for the occurrence of clairvoyance in the experiment. For a study of a specific relation between subject-experimenter attitudes and clairvoyance performance, it is necessary to analyze the data in a manner that takes the work of each subject in each session as the statistical unit of observation. This was done by evaluating the consistency of the subjects' scoring in relation to attitude categories by means of two-by-two contingency tables. Two runs were performed for any particular subject-experimenter relationship, but the attitudes were determined separately for each occasion. The results are presented in Table 5: those for the subject's attitude in Part A, those for the experimenter's attitude in Part B, and those for their reciprocal attitude in Part C. Runs with a mean chance expectancy score are omitted. The results of each of the three analyses is significant at the .01 probability level or lower, the subject's attitude exerting a greater effect than that of the experimenter.

A determination of the correlation between the score of the student when he was a subject and the score of his classmates when he was the experimenter provided a value of $+.26$, which, with $N = 9$, is not significant.

Table 5

ESP Run Score Level in Relation to Subject's Attitude Toward Experimenter (Part A), Experimenter's Attitude Toward Subject (Part B), and Their Attitudes Toward Each Other (Part C)

Part A

	Subject Positive	Subject Negative	Total
No. of Runs Above M.C.E.	36	20	56
No. of Runs Below M.C.E.	22	35	57
Total	58	55	113

$\chi^2 = 7.46$ (1 d.f.) $P = .0063$

Part B

	Experimenter Positive	Experimenter Negative	Total
No. of Runs Above M.C.E.	32	23	55
No. of Runs Below M.C.E.	26	32	58
Total	58	55	113

$\chi^2 = 6.81$ (1 d.f.) $P = .01$

Part C

	Subject and Experimenter Positive	Subject and Experimenter Negative	Total
No. of Runs Above M.C.E.	20	8	28
No. of Runs Below M.C.E.	9	18	27
Total	29	26	55

$\chi^2 = 15.23$ (1 d.f.) $P = .0001$

Discussion

The results indicate that the level of scoring in this test of clairvoyance with college students is positively related both to the subject's approval of the experimenter and to the experimenter's approval of the subject. The relationship is closer for the subject's attitude than for that of the experimenter. This is in agreement with findings in tests with secondary and primary school pupils in which their teachers were the experimenters (1, 2, 3). The present results indicate that the subject and experimenter need not be in the relationship of pupil and teacher in order that their attitude toward each other affect the level of clairvoyance scoring.

The relationship between attitude and clairvoyance score may have been the result of the psi influence of the writer acting in the background as the real experimenter. However, the occurrence of such an influence has not been established, and its production of the psi effects in the present experiment would indeed be complicated.

The students' knowledge of the purpose of the experiment, coupled with the designated "attitudes" between subject and experimenter may indirectly have affected the clairvoyance scores by influencing the motivation of the participants to score well or poorly as the case may be. Or the attitudes between subject and experimenter may have affected the clairvoyance scores in a more direct manner without influencing their scoring motivation. The methodology of the present experiment does not permit a test of the two possibilities.

In the present experiment, the number of subjects receiving the approval, or disapproval, of the experimenter did not vary between sessions. There were always four whom he listed as preferred and four whom he did not. If the number had varied, the apparent relation between the experimenter's attitude and the clairvoyance scoring level could have resulted from the experimenter's approval of a greater number of subjects on days in which the clairvoyance scores were higher (some unidentified intermediate factor, such as the weather, increasing both the extent of the experimenter's approval and the clairvoyance scores). While the number of subjects who approved of the experimenter did vary between sessions (since

some subjects may not have included him on their "preferred" list), the high value of the correlation between the number of students who approved of the individual when the latter was and was not the experimenter ($r = +.94$) lessens the likelihood that the relation between the subject's attitude and clairvoyance score was the result of a variable intermediate factor.

When serving as the experimenter, each student attempted to establish rapport with the subjects. The fact that the students were better known to each other through their relations outside of the actual testing situation than in it would seem to reduce the effect of their actions as experimenter on the subjects' attitudes toward them. Nevertheless, the effective participation of the experimenter in the testing situation may have been lessened by routinization as the experiment advanced. That this was the case is suggested by the more pronounced effect of the subject's attitude toward the experimenter during the first half of the experiment, although the effect of the experimenter's attitude toward the subject was virtually the same in both halves. (See Table 2.)

The results suggest that the level of clairvoyance scoring may be altered by change of attitude of the subject toward the experimenter, in agreement with previous findings (4), or of the experimenter toward the subject. (See Table 4.)

It might be supposed that the score obtained by the individual when he was a subject would be related to the scores obtained when he was the experimenter. However, in an experiment by the writer with college students, a significant correlation did not occur between the score of the student when he was a subject and the score of his classmates when he was the experimenter (5). The insignificant correlation between these scores in the present experiment agrees with the earlier finding.

References

1. Anderson, M., and White, R. Teacher-pupil attitudes and clairvoyance test results. *J. Parapsychol.*, 1956, **20**, 141-57.
2. ———. Clairvoyance and teacher-pupil attitudes in fifth and sixth grades. *J. Parapsychol.*, 1957, **21**, 1-11.
3. ———. A further investigation of teacher-pupil attitudes and clairvoyance test results. *J. Parapsychol.*, 1957, **21**, 81-97.

4. ———. The relationship between changes in student attitude and ESP scoring. *J. Parapsychol.*, 1958, 22, 167-74.

5. NASH, C. B. Two exploratory ESP experiments: summary of results. *J. Amer. Soc. psych. Res.*, 1960, 54, 136-37.

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ERRATA

The following corrections need to be made in the values of chi-square given in Table 5 on p. 195 of the preceding article:

Part B: $\chi^2 = 2.02$ (1 d.f.) $P = .16$

Part C: χ^2 (with Yates's correction) $= 6.55$ (1 d.f.) $P = .0105$

Note: As the χ^2 value of Part B is not significant, the results of the experiment do not indicate that the level of scoring is related to the experimenter's attitude toward the subject.

MEDIUMSHIP AND HUMAN SURVIVAL[1]

By Prof. H. H. Price

My subject this evening is the phenomena of mediumship, and I am going to confine myself to what is called mental mediumship (as opposed to physical).

A mental medium is a person who has the capacity of making verbal communications in an apparently paranormal manner, communications which usually, though not quite always, purport to come from discarnate personalities. Whatever the right explanation of them may be, there can be no doubt that the phenomena of mental mediumship are of great theoretical interest. Puzzling and paradoxical though they are—or indeed just because they are so puzzling and paradoxical—they show that human personality has capacities which our ordinary everyday experiences would not lead us to expect; and the emotional repulsion which they may arouse in our minds should not prevent us from studying them. In short, the phenomena of mediumship must be important to the student of human nature whatever the correct explanation of them may turn out to be.

Perhaps I should first mention that not all mediums are females, though many are; and for brevity's sake I shall speak of them in the female gender. Nor are they all persons of very low intelligence or very unstable character, though some perhaps are both. Nor are they all professionals who are paid for their services. Some of them are amateurs; and some of these, so far from wanting to exploit their gifts for commercial purposes, find them rather a nuisance and wish they did not possess them.

More important, the medium need not be in a trance at the time; that is, unconscious of her physical surroundings, unresponsive to

[1] This article is a slightly expanded version of a lecture delivered on May 25, 1959, under the auspices of Trinity College, Hartford, and under the sponsorship of the Beta Chapter of Phi Beta Kappa of Connecticut and the Colloquium on the Nature of Man. The lecture was repeated subsequently at the Symposium on Incorporeal Personal Agency at Duke University, June 12, 1959. The *Journals* for March and June, 1960, have contained four of the addresses given at the I.P.A. Symposium.—Ed.

physical stimuli, and incapable of remembering afterwards what she said and did. Trance mediumship is not the only sort, though it is the most interesting sort from a theoretical point of view and is the one I shall chiefly talk about.

I should add that in the trance cases, where the communication is made by means of spoken words, there are two different ways in which it may be made. Sometimes the medium appears to be giving a conscious description in her own words of something that she sees or hears; and what is abnormal or supernormal (in these cases) is her perceptions rather than her utterances. Sometimes these perceptions appear to amount to full blown visual or auditory hallucinations; sometimes they appear to consist only of very vivid mental imagery.

The most interesting cases, however, are those in which automatic speech occurs (i.e., the medium herself is not consciously controlling her vocal organs); and these are the ones I shall mainly consider. The phenomena are certainly very extraordinary, whatever the right explanation of them may be. The medium, when in a trance, speaks in a different voice from her usual one, with different mannerisms and vocabulary, and even occasionally in a foreign language which in waking life she does not understand. In her ordinary life she may be a naïve and uneducated person; but in her trance we may find her delivering complicated philosophical or theological discourses. This same abnormal voice, manner, and vocabulary may occur repeatedly with the same medium at different sittings. On the other hand, in the same sitting many distinct voices, manners, and vocabularies may also occur, quite different from each other, and all different from the normal voice, manner, and vocabulary of the medium herself. To anyone who has witnessed such occurrences, they almost irresistibly suggest, at the time, that some extraneous personality has got control of the medium's body or at least of her vocal organs. That is the immediate impression they make, whatever second thoughts one may have later. If you did not know you were at a séance—or if you heard the words from outside the door or over the telephone—you would conclude without hesitation that some intelligent being other than the medium herself was uttering them. It is not at all surprising that spiritualists accept

this Possession Theory of trance mediumship at its face value. The appearances do strongly suggest it. Appearances may be deceptive, of course (we shall consider an alternative explanation presently); but in this case they can certainly be very impressive to anyone who actually witnesses them. Indeed, to form a fair judgment on this difficult matter, I think it is almost essential that one should have oneself attended some sitting with a "good" medium. The oddity and the impressiveness of the phenomena are not easily conveyed at second hand.

Usually, though not quite always, a trance medium has what is called a "control" or "controlling spirit" corresponding more or less to the "familiar spirits" spoken of by our ancestors. (Some mediums have more than one "control," but this, I think, is unusual.) Still sticking to the prima facie appearances and using the language of the Possession Theory which they suggest, it seems as if there were some one extraneous personality who controls a given medium's body most easily and has made himself an expert at the job of taking possession of it. At the beginning of the trance, and sometimes again at the end, this personality takes over, often announcing himself by name. After talking for a while, he introduces other "spirits" whom he alleges to be present. Then the voice, manner, and vocabulary change abruptly; and it is as if some other extraneous personality, different from this first one but equally separate from the medium herself, had now assumed control of the medium's body, and often he announces that he is some deceased relative or some friend of one of the sitters. Sometimes the air of verisimilitude is increased, rather than diminished, by the fact that this new intruder seems to be having difficulties. He talks in a whisper, perhaps. He seems to find it hard to make himself understood, speaks in broken words, becomes confused and forgets what he wanted to say, much like an inexpert and rather flustered person who is using a telephone for the first time. (Sometimes the "control" has predicted this beforehand. He has said, "Mr. So-and-So is here, but he is not very expert. He will try to talk but he may not be very successful in getting through.")

This kind of thing may go on for quite a long time, even for several hours. It is as if a whole series of personalities, different

from each other and from the medium, took possession of the medium's body one after another. Each of them, usually, though not invariably, makes an attempt to identify himself with a deceased person known to one or another of the sitters. Sometimes he does it by recalling a place, person, or incident familiar to the sitter; sometimes by making predictions which that particular person should be able to verify or by giving him advice about some problem which is worrying him; and not infrequently these predictions turn out later to be true, and the advice turns out to be good.

In other cases (still using the terminology of the Possession Theory) a single extraneous personality appears to hold the field for most of the time and utters a long philosophical or theological discourse, or again an account of the kind of life which he and others live in the next world. I myself at a séance a few years ago listened to an almost unbearably tedious exposition of a watered-down Adoptionist Christology, delivered with incredible rapidity and at enormous length by a personality who purported to have been a London street-urchin in this life. (He explained that he had learned his theology since he passed over.) Communications of this kind are often "a blend of twaddle and uplift"—as Professor Broad puts it—and are sometimes excessively boring to hear or to read. It would seem that the art of saying very little in a very large number of words is as well understood "on the other side" as it is here. There are, however, exceptions. Some of the theological and philosophical discourses are coherent and well presented, and the same is true of some of the descriptions of life "in the other world." The matter may or may not be acceptable, but the manner suggests an intelligent and thoughtful person who knows what he is about. (There are some excellent examples in an article called "A Study of the Psychological Aspects of Mrs. Willett's Mediumship and of the Statements of the Communicators Concerning Process" by Gerald Balfour.[2]) The same is true of some of the descriptions of life "on the other side," of the difficulties which a newly-dead person has in adapting himself to them, and of the various sorts of "other worlds" which there are. Such descriptions are sometimes detailed and intelligent, and are formulated in a matter-of-fact

[2] *Proc. Soc. psych. Res.*, 1935, **43**, 41-318.

way, without any uplift at all. Of course, we have no means of verifying them, but the manner in which they are presented inspires some respect; and they are interesting to hear and to read in the way that a good book of travel is.

What are we to make of these queer happenings? We must try to make something of them. The evidence is too abundant to be ignored. There is no question at all that automatic speech and writing do occur. There is no question at all that the utterances of entranced mediums do strongly suggest that the medium's body is being controlled by a personality other than the medium's own. There is no doubt that the information given is often outside the medium's knowledge when she is in her normal waking state; and often it turns out to be true and sometimes, as far as we can tell, it is outside the knowledge of any living human being at the time when the communication is made. Moreover, this information is sometimes about the future and is later verified to a degree which is not easily explained by chance-coincidence. Lastly, when unverifiable things are said (as in the theological discourses or the descriptions of the other world) they are sometimes coherently and intelligently said; and the medium in her normal waking state is quite incapable of inventing them.

If we are not going to explain the phenomena by the hypothesis of discarnate agency—by the Possession Theory of the spiritualists—how are we going to explain them?

Well, perhaps we may get some help from abnormal psychology. The phenomena of abnormal psychology are almost as queer as those of mediumship, and some of them are queerer in an analogous way. I think that the spiritualists have not paid enough attention to them, a defect which they share with some theologians and (I am afraid) with not a few philosophers. There is the very odd phenomenon of multiple personality, for instance. It would appear that the human mind is by no means the "simple substance," the indivisible *res cogitans* or "conscious entity," which philosophers have imagined it to be. On the contrary, it seems to be highly complex and most of its constituents at any given time seem to be unconscious. The unity which a human mind possesses seems to be

a matter of degree, not a matter of all or none. Its degree of integration varies in different conditions. Even in the most sane and normal human mind (I nearly said "the most repulsively sane and normal") there is probably some degree of dissociation, or at least some tendency to it—the faint beginnings, at any rate, of a split personality. Within each of us there are subsystems of thoughts, memories, and wishes which function with some degree of autonomy. Philip drunk and Philip sober are not quite two different personalities, but they are somewhere near it. The same could be said of Philip waking and Philip dreaming.

Now psychopathologists tell us that a severe emotional shock, or even a prolonged condition of emotional strain, may produce a complete mutation of personality, where the patient loses his memories of a long period of his life, treats his friends and relatives as complete strangers, and displays a different character from the one he had before. The organism is the same, but its behavior—its utterances and its acts—manifests another set of thoughts, emotions, and desires dissimilar to and disconnected with those we were accustomed to expect of it. A secondary personality, different from the normal one—a personality previously repressed or unconscious—is manifesting itself.

Ordinarily such a secondary personality is repressed, though it may give occasional evidence of its presence by means of dreams, or by means of isolated and apparently accidental actions, such as slips of the tongue or of the pen. But if some unusual physical or physiological condition gives it the opportunity of manifesting itself continuously for some time, by means of utterances and other forms of bodily behavior, what will happen? To the outside observer, it will be as if Mr. Smith's body was possessed by some extraneous mind, quite different from the ordinary Smith-mind to which we are accustomed. If our outside observer had been an inhabitant of the later Roman empire, he would have said that Smith's body is possessed by a *daimon,* whether benevolent or malevolent. If on the other hand he is a modern spiritualist, he will say that Smith's body is being controlled by a discarnate human mind.

Now are not these occurrences very like what happens in trance mediumship? In trance mediumship, as I have said already, the prima facie appearances do very strongly suggest that the medium's body is possessed by an extraneous personality. But the investigations of the psychopathologists suggest something different. They suggest that what is manifesting itself through the medium's vocal organs is a secondary personality of the medium herself, a relatively coherent and organized system of thoughts, memories, and desires which is part of the medium's own mind, though in normal waking life it is repressed into the unconscious.

It may be significant in this connection that the "controls" of trance mediums quite often purport to be deceased children. It is notorious that childish thoughts, desires, and memories are very liable to be repressed in adult life. The mediumistic trance (whatever its nature is) may give them their opportunity. It may also be significant that in the performances of some mediums—not the best ones—the discarnate spirits of very illustrious persons, such as the Emperor Augustus, purport to be communicating. May not this be a way in which repressed childish wishes for fame or power contrive to find an outlet?

Moreover, the phenomena of psychopathology also suggest that such secondary personalities may possess very remarkable powers of imaginative invention and dramatization. It would not be beyond them to produce plausible and coherent impersonations of other people. And as a matter of fact the dreaming mind can do this in all of us, however sane and sensible we are when awake.

What force is there in this alternative explanation of mediumistic communications—the skeptical explanation, as we might call it? Clearly there is a great deal. There is a striking analogy between the phenomena of mediumship and the mutations of personality described by psychopathologists. But, as it stands, this hypothesis is too narrow to cover all the facts. To make it cover them we shall have to add to it and stretch it in a way which may be rather impalatable to tough-minded naturalistic persons. And when we

have done so, we shall perhaps find that it is not so utterly different from the survivalist explanation as it looks.

The trouble is that, as it stands, this skeptical explanation in terms of secondary personalities leaves out the paranormal aspect of mediumistic communications altogether. And the paranormal aspect is there, whatever the right explanation of it may be.

You remember I spoke earlier about the so-called controls or controlling spirits which most trance mediums purport to have. The control is a kind of master of ceremonies at the séance, and a given medium usually has the same control at different séances (or the same small group of them). Now it is a very plausible hypothesis that a mediumistic control—for example, Mrs. Leonard's celebrated control, Feda—is just a secondary personality of the medium herself. But what about the other personalities which purport to manifest themselves at the séance; for example, deceased relatives or friends of the sitters? These vary from one séance to another. Indeed that is the whole point of the performance. Mr. Jones' deceased father manifests himself at one séance, Mr. Brown's deceased business partner at another. I must add—just to make things more difficult—that sometimes they are not deceased relatives or friends of anyone who is actually present, but of some absent person, unknown to the medium even by name, for whom one of the sitters is acting as a proxy. And these "proxy sittings," as they are called, are sometimes as successful as the ordinary kind.

Granting that the "control" is just a secondary personality of the medium herself, what are we to say about those other personalities? We have to remember that these allegedly discarnate personalities sometimes give verifiable information which is quite unknown to the medium in her normal state, equally unknown to the sitters, or even unknown at the time to any living person; and that they sometimes use a vocabulary which is beyond the medium's normal understanding, or even occasionally a foreign language which she does not know. And how is it, moreover, that the characteristic mannerisms of deceased persons, known to the sitter but unknown to the medium, are sometimes reproduced so accurately that the

sitter claims to recognize them at once? The same difficulty arises at least in some degree when the deceased relatives do not purport to speak in their own person, but are merely described as if the medium were seeing them and reporting what they say.

It seems perfectly clear that if the medium's unconscious is responsible for all this, her unconscious must be supposed to have paranormal cognitive powers, and pretty extensive ones too.

We shall have to suppose, first, that there is telepathy between the medium and the sitters (or the absent people for whom they are "proxies"). Some unconscious stratum in the medium's mind must somehow have access to the memories of the sitters—and not only the memories they are conscious of at the moment, but others too which are subconsious or even at the time forgotten. Out of those memories, like a very skillful actor, it presumably improvises a lifelike impersonation of some deceased person, so lifelike that the sitter cannot distinguish it from the real thing. Such a remarkable feat of dramatization probably *is* within the power of the unconscious mind; at any rate, the phenomena of psychopathology suggest so. But the materials, the information, which are used for this purpose must be obtained telepathically. There is therefore still something paranormal about the performance, even if the medium herself is wholly responsible for it.

Nor is this all. The telepathy which occurs must be selective and directed. An indiscriminate telepathic leakage from the minds of the sitters to the mind of the medium would not be enough to account for all the facts. There may be several sitters present, and one or more of them may be "proxies" for people who are absent. If memories telepathically drawn from Mr. A's mind were combined with the memories drawn from Mr. B's, the resulting impersonation would not be very convincing to either of them. Memories referring to Mr. A's late Aunt Martha must not be mixed up with memories referring to Mr. B's late cousin Agatha. If they are, the result will not be a very lifelike impersonation of either lady. Again, each individual sitter, Mr. A for instance, is sure to have memories (conscious or subconscious) of many different deceased

relatives or acquaintances; and these must not be mixed up either, if a convincing impersonation is to be produced.

The telepathy, then, must be selective and discriminating, in some way purposively controlled, unlike the telepathy which we know of from other (non-mediumistic) evidence. For this other evidence suggests that the telepathic recipient receives his telepathic data in an automatic and passive manner. It suggests that telepathy, on the recipient's side, is rather like catching a disease by infection and is a process over which one has very little voluntary control, if any; whereas the telepathy which is supposed to occur in the medium according to the present hypothesis is more like a conscious and discriminating investigation of the contents of other people's minds.

We notice, further, that verifiable information is sometimes given about facts which at the moment are not known to the sitters at all, facts which the medium cannot have found out in any normal manner. Directions are sometimes given for finding lost objects, for instance, and sometimes they turn out to be correct. This information may of course be contained in the mind of some living human being or other and therefore may be obtained telepathically. But if so, how has the medium managed to direct her telepathic powers to the right person? Does she "telepathically fish" in dozens or hundreds of people's memories until she finds the information which is asked for? If so, her telepathic powers must not only be very extensive and very discriminating; she must also be able to control and direct them with a very surprising degree of accuracy.

It would be simpler, I believe, to suppose that in these last cases the information is obtained not by telepathy but by clairvoyance, which may be defined as the acquiring of true information about physical objects without the use of the sense organs or of memory or of rational inference. We have evidence from other sources that clairvoyance does occur, though we have not the remotest idea of how it works; and the name "clairvoyance" (literally "clear seeing") is not a very good one because the process, whatever it is, must be something very different from normal sense perception. But if that is the explanation we offer, we have now committed ourselves

to attributing two paranormal cognitive powers to the medium (or to a secondary personality of hers); not telepathy only, but clairvoyance as well.

And we cannot stop at that, for sometimes information about the future is given and its verification by subsequently observed facts cannot be reasonably explained by chance-coincidence.

To explain such predictions, we shall have to attribute still another supernormal cognitive power to the medium, namely precognition. Of all the phenomena investigated by parapsychologists, precognition is the most puzzling and paradoxical. But there is other evidence that it does occur quite apart from mediumistic communications. (The evidence comes partly from card-guessing experiments, and partly from precognitive dreams and visions.)

To sum up the results of the discussion so far, we can now see that this "skeptical" explanation of mediumistic communications has become much less skeptical than it looked at first. Its intention was to explain the phenomena in terms of abnormal psychology. But to make the explanation at all complete, a good deal of supernormal or paranormal psychology has to be introduced as well.

It comes to this: if you want to be skeptical about survival, you have to be *un*skeptical about paranormal cognition, or ESP. Indeed, at least as far as telepathy is concerned, you have to be more than unskeptical. You have to be almost credulous. You have to suppose that the ESP powers of the medium—at any rate of good mediums—are far more extensive and far more accurate than our other evidence about telepathy would suggest. You have to suppose, moreover, that the ESP powers of the medium, though exercised unconsciously, are under some degree of intelligent and purposive control, as if she could telepathically rummage about among the contents of other people's minds till she finds the piece of information which is wanted, and could discriminate accurately between the contents of one person's mind and the contents of another person's.

It must not be supposed, then, that this anti-survivalist theory of mediumship is a timid or unconstructive one. On the contrary, it

might be criticized for being too speculative and audacious. It presents us with a bold synthesis of conceptions drawn from two different though related fields, parapsychology and psychopathology, and it uses them to provide a comprehensive explanation of all the phenomena of mediumship or at least of mental mediumship. Professor Hornell Hart has called it the "Super-ESP Hypothesis."[3] Perhaps the prefix "super" has a slightly depreciatory flavor, and suggests that too great a weight is being laid on the ESP powers of the medium. It would be better to find a quite neutral name for this hypothesis, if we could. So I am going to call it the "This-World-ESP" hypothesis.[4] This brings out the essential point, that the ESP powers of the medium, however extensive, are supposed to be restricted to persons and things in this world. Her telepathic powers, great as they may be, are supposed to give her access only to the minds of living and embodied human beings; her clairvoyant powers are supposed to give her access only to events and situations in the observable physical world.

It cannot be doubted, I think, that this theory of mediumship does give a very plausible explanation of some of the phenomena, indeed of many of them. There must surely be a close connection between the phenomena of mediumship and the mutations of personality investigated by psychopathologists. There would also seem to be a close connection between mediumistic phenomena and dreaming. The utterances of an entranced medium may be regarded as a kind of "dreaming aloud." (The same could be said *mutatis mutandis* of at least some forms of automatic writing.) Or, to put it more cautiously, mediumistic communications seem to originate in the same stratum of human personality as dreams do; and here, of course, we must remember that there are telepathic and clairvoyant dreams and sometimes precognitive ones.

Again, there can be very little doubt that some mediumistic communications can be completely accounted for by telepathy be-

[3] *The Enigma of Survival* (Springfield, Ill.: Charles C. Thomas), Chap. 9.

[4] On the continent of Europe it is sometimes called the animistic hypothesis (as contrasted with the spiritualistic hypothesis), but this rather odd use of the term "animistic" has not so far found favor in the English-speaking countries.

tween the living. The first thing which strikes anyone who has personal acquaintance with mediumship is the way in which his own thoughts, memories, and wishes (including subconscious ones) are "given back" to him by the medium in the form of ostensible communications from the next world. Yet these thoughts, memories, and wishes of his are not known to the medium in any normal manner. She may never have seen him before and may not even know his name. The almost irresistible inference is that there has been some kind of "telepathic leakage" from the sitter's mind to the mind of the medium; that the mind of the sitter, including thoughts or memories or wishes of his which are not in his consciousness at the moment, is somehow accessible to the ESP powers of the medium; and that the information thus acquired is then "dressed up," more plausibly or less, in the guise of a communication from the spirit world.

I am not convinced myself that the This-World-ESP hypothesis is a completely satisfactory explanation of all mediumistic communications, though it does give a very satisfactory explanation of some of them. Perhaps it does not tell us the whole truth about mediumship; for it might be that discarnate minds, as well as embodied ones, are accessible to the ESP powers of the medium, or of some mediums, at least sometimes. But if the This-World-ESP hypothesis tells us at any rate a part of the truth about the phenomena of mediumship—as I think we must admit that it does—then these phenomena do at least show that human personality is something much more complex and also (if I may say so) much less neat and tidy than we usually take it to be. In this respect, they provide us with further evidence for the conclusions already suggested by the phenomena of abnormal psychology. It appears that the unity of the human mind is a matter of degree and not a matter of all or none. And such unity as it has at any time is less stable than we ordinarily think. It has subconscious and unconscious strata as well as conscious ones. Portions of it which are repressed in normal waking life may emerge from time to time and take control of the body, returning later to their ordinary repressed condition. A

book has recently been written called *The Three Faces of Eve.*[5] I think we all of us have many faces; and the thoughts, feelings, wishes, and memories which we display to the world in our normal waking state are by no means the only ones that we have. In all of us, I suggest, there is some degree of dissociation, the beginnings at least of a divided personality. In mediumship we see writ large, displayed in glaring colors, the disunity, the instability, the many-levelled character which is present in some degree in the minds of all of us.

To some this may appear a disconcerting suggestion. Is it not equivalent to saying that we are all of us a little mad? Yes, it does come to that. But there is such a thing as being too sane. The ideal which some preachers and even some psychologists put before us of a completely integrated personality seems to me to be an exceedingly repellent one. It has the same kind of repulsiveness as the idea of a completely integrated or totalitarian society. If all of us were what these people want us to be, everything that we call originality and inspiration (whether intellectual or artistic) would vanish from the world; and certainly genius would vanish. For all these things suggest some degree of dissociation, some abdication of the control which our normal waking self exercises over the course of our thoughts, imaginations, and feelings. They depend upon what have been called "subliminal uprushes." I think we should be thankful that the human mind is not the indivisible conscious entity which some philosophers say it is, and some preachers and educators say it ought to be.

So much for some of the implications of what I have called the This-World-ESP hypothesis and of the explanation of mediumistic phenomena which it offers us. This explanation, or something like it, is what we are driven to if we reject the survival hypothesis.

We must now ask whether we are in a position to decide between these two hypotheses. But first let us be quite clear what the two alternatives are between which we should have to choose.

[5] By Corbett M. Thigpen and Hervey M. Cleckley (New York: McGraw-Hill, 1957).

We have to admit, I think, that the This-World-ESP hypothesis is almost certainly the correct explanation of some mediumistic communications. Consequently, it is not open to us to reject the This-World-ESP hypothesis altogether. The only question is whether it is the correct explanation of *all* mediumistic communications. The situation is, I think, that we are confronted with a scale or series of different cases. (This may remind you of the scale or series of cases discussed by Dr. Louisa Rhine in her lecture on non-recurrent spontaneous experiences.[6]) There are some which the This-World-ESP hypothesis fits perfectly and the survival hypothesis does not fit at all. There are many where the This-World-ESP hypothesis fits the facts pretty well, and the survival hypothesis also fits them pretty well. And there are still others where the This-World-ESP hypothesis cannot absolutely be excluded, but becomes exceedingly complicated, because we should have to suppose that the medium uses her ESP powers to collect information (unconsciously of course) from the minds of many different living persons, one bit from one mind, another bit from another; that she then combines all these different bits of information (again unconsciously), excluding any irrelevant bits which she might have picked up by the way; and finally produces a lifelike impersonation of the deceased person to whom all these different bits of information refer. In these cases, assuming that the information is accurate, or accurate for the most part—as it sometimes is—and that the medium cannot have obtained it in any normal manner (and sometimes we can be pretty certain of this too), the survival hypothesis gives a much simpler explanation of the facts. If the late Mr. Jones has survived death, all this information could be obtained quite easily from one single mind, namely the mind (or memories) of Mr. Jones himself, presumably in a telepathic manner. It would not have to be collected by an elaborate process of extrasensory biographical research into the contents of many different minds; and no question would arise about how the medium knew (in an unconscious and para-

[6] The evaluation of non-recurrent psi experiences bearing on post-mortem survival. *J. Parapsychol.*, 1960, **24**, 8-25.

normal manner) which are the appropriate minds to research into. Here the simplest explanation is to suppose that the medium's ESP powers are not confined to this world but extend to another world as well.

Nevertheless, I doubt very much whether we can find any case at present where the This-World-ESP explanation is absolutely impossible. The difficulty is obvious, and many students of the subject have already drawn attention to it. We do not know what the limits of this-worldly ESP are, or even whether it has any. Are there events in this world, whether mental ones or physical ones, which are so distant in space and time or both that they would be beyond the range of the ESP powers of even the most gifted mediums? We do not know.

We do, however, know that mediums differ a good deal from one another. At any rate, we can say, in a rough way, that some are "more gifted" than others. Rather naturally, we are inclined to restrict our investigations to the most gifted mediums that we can find. But perhaps this is a mistaken policy, at any rate if our aim is to decide between the This-World-ESP hypothesis and the survival hypothesis. It might be that in the most gifted mediums the capacities I have mentioned really do have no limits, or none that we can hope to discover; just as it is virtually impossible for us to assign limits to the imaginative powers of Shakespeare or to his powers of poetical expression or dramatic presentation. But perhaps the situation could be more hopeful if we turned our attention to persons who have some mediumistic gifts, but less distinguished ones.

Let us again consider the capacity for paranormal and unconsciously conducted biographical research, the most puzzling, perhaps, of the paranormal capacities which the This-World-ESP hypothesis has to postulate. Conceivably this capacity may be present in some degree in anyone who has mediumistic gifts at all. But surely it must have some limits in the less gifted mediums, even if it has no limits, or none that we can detect, in the very gifted ones such as Mrs. Piper or Mrs. Leonard. After all, the question we have to consider is whether a particular communication received through a

particular medium can be wholly explained by the This-World powers of that particular medium. We are not asking whether someone else could consciously have collected the information by directing his or her ESP powers upon the minds of various living human beings, but whether this particular medium could have done it, being the sort of person she is. And some day we might be in a position to say that at any rate *she* could not have done it, even though some much more gifted medium such as Mrs. Piper or Mrs. Leonard conceivably could have.

I think, then, that the problem of assigning limits to this-worldly ESP powers is not necessarily insoluble. But certainly we have not solved this problem yet, and there does not seem to be any immediate prospect of doing so. What, then, is our present position? It is this. We cannot at present reach a decision between the This-World-ESP hypothesis and the survival hypothesis; or rather between the hypothesis that This-World ESP accounts for all the phenomena and the hypothesis that it accounts for some of them but not all, and that the remainder can only be accounted for by supposing that there are discarnate personalities.

If we are looking for a proof of survival, then, we certainly have not got it. What we have got is evidence for survival. The evidence is not conclusive, because there is an alternative explanation which we are not in a position to eliminate—the explanation offered by what I have called the "This-World-ESP" hypothesis. This alternative explanation covers some of the facts very well. But there are others where it becomes too complicated to be easily credible, and we have to postulate a kind and degree of ESP power which is not easily credible either. In these cases it is simpler and easier to suppose that the information given by the medium comes from a surviving personality or, if you like, that the ESP powers of the medium are not confined to this world but extend to another world as well. These are the cases which give us evidence in favor of the survival hypothesis, though the evidence is not conclusive.

This is a disappointing result, no doubt. The investigation of the problem of survival by empirical methods, pursued in a more or less scientific spirit, has been going on for more than seventy years

now, ever since the foundation of the London Society for Psychical Research in the 1880's. And we are still nowhere near a solution of it, though the investigation has certainly revealed some queer and unexpected facts about the human mind and has also provided us with some evidence which is not very easily explained unless the survival hypothesis be true.

But though, as far as I can see, it would be unreasonable to be convinced of survival on the empirical evidence we now have, it does seem to me that the evidence is sufficient to give the survival hypothesis an appreciable probability. The reasonable attitude about it could perhaps be expressed in this way: it is by no means out of the question that the survival hypothesis might be true. Or, if you like, we may say that in the light of the empirical evidence, it would not be so very surprising if the survival hypothesis should be true. There is a chance that we may find ourselves surviving after death; a chance which is not small enough to be negligible. In the light of the empirical evidence, it is a possibility which has to be reckoned with.

Or, if you prefer to look at it that way, it is a risk which a reasonable man must take into account. One would describe it as a risk (that is, a chance but an unwelcome one) if one regarded survival as an evil rather than a good, and it seems to me that quite a number of people do regard it as an evil rather than a good. I suspect that there are quite strong motives, conscious in some persons, unconscious in others, which tend to make the idea of survival repellent to many. To such people (I think I am one of them myself, at least sometimes) I should say: "Do not be absolutely sure that your personal existence will come to an end when you die. There is an appreciable risk that it may continue, and it will be reasonable for you to pay some attention to that risk, much as you may dislike doing so."

If I am right in summing the matter up in this way, the consequences are quite important. Let me give some examples. If the chance that all or most human beings survive after death is even as high as 1/50 (I use this fraction just for the sake of illustration, to make the notion of a small but appreciable chance more concrete), our moral obligations are in some degree affected. It is a mistake

to suppose that our moral obligations are concerned only with our outward actions. What we think privately in our hearts is just as important as what we do publicly in the market place, or perhaps more so; and the directions which our thoughts take is in some degree under our voluntary control, just as our outward actions are. Now let us consider the obligations of charity or benevolence. Suppose that someone well-known to us has recently died. If there is a chance (or, if your prefer, a risk) of even 1/50 that he survives, we cannot neglect the possibility that the thoughts and feelings we have about him may make a considerable difference to his condition. They may well affect him telepathically. If so, charity requires of us that we should take at least a little trouble to think kindly of him and wish him well. We ought to spend at least a little time and energy in thinking kind thoughts about him and in cultivating a well-wishing attitude towards him. And it will be specially incumbent on us to do this shortly after he has died—and all the more so if he is someone who disbelieved in survival (as the majority of educated Western people nowadays probably do), for that is the time when he may have special difficulty in adapting himself to his new and probably unexpected situation and will need all the help he can get.

True, we do not know that he survives at all; and if he does, we do not know that our thoughts and feelings about him will have any effect on him. But similarly, when we are driving round a blind corner in the road, we do not know that there is a pedestrian or a bicyclist on the far side of the corner; nor do we know (supposing that there is one) that we shall run into him if we drive round the corner at 45 miles an hour. Nevertheless, we have a moral obligation to slow down "just in case."

But I am most concerned to point out that questions of prudence (of enlightened self-interest) will arise, as well as of moral obligation, because this, perhaps, is less obvious. If there is a chance—let us again put it as low as 1/50 for the sake of illustration—that one will oneself survive death and will continue to be conscious, to have thoughts and feelings, one will be wise to spend a little time and energy in considering what kind of an existence one might have after death, supposing one does survive, and in preparing oneself

for that possibility (or that danger if you prefer to look at it so). It has been said that "we brought nothing into this world, and it is certain that we can carry nothing out." With all respect, I venture to disagree with this statement, or at least with the second part of it. It seems to me that if there is personal survival, we shall take a good deal with us when we pass out of this world into the next: namely, our memories, our desires, our character (that is, our acquired conative and emotional dispositions), and any ESP powers we may have. And the memories and desires will presumably include those unpleasant or guilty ones which we have "repressed" in this present life. Indeed, I am afraid that we shall have a very considerable amount of psychological luggage to take with us if we do survive; and we shall be wise to take a little trouble, while we still can, to insure that it is of a desirable kind, just in case the survival hypothesis should be true.

I want to say again that as a student of paranormal phenomena, I am not concerned with the man who is 100 percent convinced of survival. I think rather of the man who is satisfied that there is some evidence of survival but does not regard the evidence as conclusive. And I am saying that it will be prudent for him, and in certain circumstances morally obligatory, to arrange his life rather differently from the way most people in our society arrange their lives now. The most important difference, I suggest, will concern the way he directs his thoughts, and the kind of emotional attitudes he cultivates.

Let us not say, then—as perhaps we may be inclined to—that long inquiry into the problem of survival has "got us nowhere" and shows no likelihood of getting us anywhere. It has got us somewhere, and somewhere quite important, even now. For one thing, it has thrown unexpected light on human nature. It has shown us that the human mind is at once more complex and less stably unified than we suspected. Something very strange and very interesting is certainly occurring when mediumistic communications are made, whatever the right explanation may turn out to be. But more than that, the investigation of mediumship has shown, I suggest, that the chance of survival, in the light of empirical evidence, is not so negligibly small as most educated people are accustomed to

suppose. In the light of the evidence of mediumistic phenomena the probability of survival is far indeed from amounting to a certainty. But it is large enough to make a considerable difference to a reasonable man's attitude to the world and to himself.

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SOME CURIOUS ESP RESULTS IN TERMS OF VARIANCE

By JOHN R. B. WHITTLESEY

When a "deck" of 25 guesses (with c_i of them in each of five suits) is matched against a target deck with $c = 5$ cards in each suit, the true theoretical variance (1, 2, 3, 4, 5, 6, 8) is:

$$\text{Var. (Exact)} = \frac{c(n^2 - \sum_{i=1}^{5} c_i^2)}{n(n-1)} = \frac{5(25^2 - \sum_{i=1}^{5} c_i^2)}{24 \times 25} \qquad (1)$$

rather than the more commonly used binomial variance:

$$\text{Var. (Binomial)} = npq = n\left(\frac{c}{n}\right)\left(1 - \frac{c}{n}\right) = 25\left(\frac{5}{25}\right)\left(\frac{20}{25}\right) = 4 \qquad (2)$$

If we let $d_i = c_i - c$, then $\sum_{i=1}^{5} d_i = 0$ and formula (1) reduces to:

$$\text{Var. (Exact)} = 4 + \frac{1}{6}\left(1 - \sum_{i=1}^{5} \frac{d_i^2}{20}\right) \qquad (3)$$

the negative portion of which is usually very small.

In a recent experiment involving tests for clairvoyance, an attempt was made to assess the effect of the hallucinogenic drug LSD-25 on psi phenomena.[1] Using ESP cards in opaque envelopes, 27 subjects made two runs of 25 guesses each, one run before receiving the drug and the second while under its influence.

The average expected theoretical variance for these 54 matchings using formula (3) was 4.085; the average observed variance (squared variation from the theoretical mean) was 1.942, about half the expected value. When the observed variances for each individual are divided by the appropriate theoretical variances from formula (3), the sum of the resulting values is distributed as chi-square with 54 degrees of freedom (7, pp. 254-61). Advantage can

[1] I wish to express my appreciation for their co-operation on this portion of the project to Dr. Betty Eisner, Prof. Oscar Janiger, his assistant, Mrs. Eve Jones, and Dr. T. T. Peck, Jr.

thus be taken of the well-known properties of the chi-square distribution to evaluate the likelihood of an unexpectedly small variance such as was observed in this experiment. The two-tailed probability of a chi-square value exhibiting as large a deviation from the expected value of 54 as does the value of 25.67 obtained here is found (9) to be less than 0.001, indicating a markedly significant reduction in variance.

This is a rather curious finding since it implies that the subjects guessed *closer to mean chance expectation* than one would expect them to by chance alone. Most of those taking part in the tests were psychiatric out-patients receiving psychotherapy. Schmeidler has found (10, pp. 65-74) that the usual "sheep-goat" variations tend to be *absent* in subjects of poor social adjustment, and this seems consistent with the hypothesis that the poorly adjusted will tend to score abnormally *close* to "chance." Schmeidler's study also attributed Rorschach qualities of "controlledness" and "rigidity of perception" to those failing to score above the chance level.

Not all of the subjects who were asked to participate in the present study were able to complete the two envelope-sorting procedures required of them. The ones who did, and who are therefore included in the data above, are those who in at least this one sense exhibited the greatest amount of conformity. Even many of these subjects commented that they felt the second run, under LSD, to be "ridiculous, petty, mundane, etc." Perhaps symptoms of conformity, constrictedness, rigidity, excessive objectivity, etc. tend in their own way to produce "constrictedness" or "narrowness" in the patterns of scoring about mean chance expectation.

References

1. Battin, I. L. On the problem of multiple matching. *Ann. math. Statist.*, 1942, **8**, 294-305.
2. Greenwood, J. A. Variance of a general matching problem. *Ann. math. Statist.*, 1938, **9**, 56-59.
3. ———. Variance of ESP call series. *J. Parapsychol.*, 1938, **2**, 60-64.
4. ———. The first four moments of a general matching problem. *Ann. Eugen.*, 1940, **10**, 290-92.
5. Greville, T. N. E. The frequency distribution of a general matching problem. *Ann. math. Statist.*, 1941, **2**, 350-54.

6. ———. Frequency distributions of ESP scores for certain call patterns. *J. Parapsychol.*, 1943, 7, 272-76.

7. HALD, A. *Statistical Theory with Engineering Applications.* New York: John Wiley and Sons, 1952.

8. LINDZEY, G. (Ed.). *Handbook of Social Psychology.* Vol. I. Cambridge, Mass.: Addison-Wesley, 1954.

9. PEARSON, KARL (Ed.). *Tables of the Incomplete Gamma-Function.* London: Cambridge University Press, 1951.

10. SCHMEIDLER, G. R., AND MCCONNELL, R. A. *ESP and Personality Patterns.* New Haven: Yale Univ. Press, 1958.

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BOOK REVIEW

LEWIS, H. D. *Our Experience of God.* London: George Allen and Unwin, Ltd., and New York: The Macmillan Co., 1959. 301 pp.

This is a most impressive work and anyone who is at all interested in the philosophy of religion should read it. It is written by a philosopher who is himself a religious person, and therefore knows from the inside what religious experience is like. It is conspicuous for its honesty and fair-mindedness. Prof. Lewis is fully aware that the chief obstacle to religious belief today is the difficulty which many people have in assigning any intelligible meaning to the statements they are asked to believe. He does his best to meet this difficulty without adopting the all-too-easy expedient of emptying these statements of their distinctively religious content. The result is that he succeeds in giving a "new look" to many ancient problems.

For readers of this *Journal,* the most remarkable feature of the book is the amount of attention devoted to "the preternatural." There are two chapters on this subject (Chs. 14 and 15) and a number of references to it elsewhere. "The preternatural" includes what we *shall* call the paranormal, though it also includes more. Prof. Lewis is one of the very few philosophers of religion who frankly recognize the existence of paranormal phenomena and their relevance to the study of religion.

Preternatural experience, he points out, is not as such religious. Many profoundly religious persons have never had any preternatural experiences at all, and those who do have them are often non-religious. Nevertheless, he thinks that preternatural experiences have played an important part in the history of religion, both for good and for ill. Some of the most potent religious symbols or "images" probably had their origin in the preternatural experiences of prophets and apocalyptic writers, and some forms of polytheism may conceivably have originated in a similar way. Again, the study of psi phenomena may throw light on the nature and the efficacy of

prayer, though we must not think that prayer is purely and simply a psi phenomenon. Accordingly, he makes the very welcome suggestion that there should be much more collaboration between students of religion and parapsychologists.

But the most important point in Prof. Lewis' discussion of the preternatural is the sharp distinction he draws between two types of preternatural phenomena. Roughly, it is a distinction between phenomena which are preternaturally caused, and phenomena which are preternatural intrinsically. To begin with the first: here an experience comes about "in some paranormal way without deviating, in any other respect, from the normal" (pp. 213-14). Thus, if I have a correct precognition of the card which is going to be turned up some seconds later "there is nothing unusual in my knowledge other than the way I come by it. . . . Likewise if I learn by telepathy and [or?] clairvoyance that an acquaintance is drowning hundreds of miles away . . . there is nothing strictly out of the run of ordinary experience in knowing that a man is drowning, but only in knowing this independently of normal observation and means of communication" (p. 214). The same is true of the extrasensory powers men may display in the control of their own bodies or of other physical objects, if we have reliable reports of such an event. "The how of it may baffle us, but not the what" (p. 214). One of Prof. Lewis' examples is levitation. "I have never witnessed levitation, and find it astonishing that it should occur. But I have no difficulty in understanding what it means" (p. 215). The point is, I suppose, that we know what it would be like for a human being to rise in the air and remain poised there without visible means of support. We have seen balloons doing the same. We know how balloons do it, but not how human beings do it, if indeed they do.

I think the reader may feel a little uneasy about this distinction between the "how" and the "what." Let us consider another example —admittedly a hypothetical one—which Prof. Lewis mentions on the same page. Suppose we could "make ourselves invisible and materialize at will elsewhere." Could it be said that the "what" of such an event would be perfectly intelligible, however puzzling its causation might be? Yes—but only if you mean by the "what" the bare perceptible and introspectable phenomena. Mr. Jones is visible

and tangible at place A for several hours. At the end of this period he wills not to be at place A any longer, but to be at place B instead. He then suddenly ceases to be visible and tangible at place A, and at the same moment (or a few seconds later) he becomes visible and tangible at place B five miles away. But he is not seen to move from the one place to the other, nor is he himself conscious of moving. The words used in this description are perfectly intelligible, but are they sufficient to give us the full meaning of the phrase "materializing at will elswehere"? Surely not, because we have not been told what would actually be happening to a human body, or to its constituent particles, if it were de-materialized at one place and re-materialized at another. We have only been told what observers would see and be able to see; and we cannot be satisfied with this, unless we are willing to accept a radically phenomenalist view of the physical world. Similarly, a purely "phenomenal" description could be given of a telepathic dream. Certain mental images were experienced, and they corresponded, in a more than merely coincidental manner, with an event or state of affairs of which the dreamer had no normal knowledge. But again this description of the "what" (what was actually happening) would only satisfy us if we thought that everything which goes on in a person's mind is introspectable. If we reject his phenomenalistic conception of the human mind, we shall say that we have *not* been given a complete account of the "what," because we have not been told what was actually going on in the dreamer's mind below the threshold of consciousness.

We may now turn to Prof. Lewis' second type of preternatural experience. Here, he thinks, we do have a difficulty in understanding what the experiences themselves were like, for it is claimed that "men may have experiences which are not describable at all in terms of the experiences we normally have" (p. 215). The most obvious examples are mystical experiences. But Prof. Lewis also mentions the "celestial journeys" described in various religious traditions, the visions of Old Testament prophets, and those of the author of the Book of *Revelation*.

But are we here confronted with a single homogeneous group of experiences, whose common feature is that they are not describable

at all in terms of the experiences we normally have? Surely the situation is not quite so bad as that. In the first place, "not describable at all . . ." puts the point too strongly, as Prof. Lewis himself admits later. It is alleged, rather, that experiences occur which cannot be *literally* described in terms of normal ones, but that they can nevertheless be described (inadequately, no doubt) by means of metaphors and analogies. Secondly, when we are confronted with narratives of such experiences, we can at least attempt to arrange them in a series or scale—a scale, as it were, of decreasing intelligibility—by considering how far the language used departs from the literal. In constructing such a scale, I think we should pay special attention to experiences referring to space and time.

Let us begin with out-of-the-body experiences. There is a brief reference to these in an earlier chapter (p. 114) and I think Prof. Lewis misunderstands them. He seems to think that "out of the body" is just a rather extravagant metaphor. But surely it is not intended so by those who have had such experiences. It seemed to them at the time that they really were outside their bodies, i.e., that they saw their own bodies from a distance. Sometimes the experient adds that he found himself to be "in" *another* body, different from the ordinary one and spatially separate from it, and that "in" this other body, he was able to move about and visit distant places. Such an experience is certainly paranormal. Would Prof. Lewis say that it belongs to his first class or to his second? Presumably to the second, since the "what" is paranormal as well as the "how." All the same, the language used in describing it does not depart very far from literal intelligibility.

Next, let us consider visions of "other worlds," as described for example by Swedenborg. (We get similar descriptions in some mediumistic communications.) In such narratives we are told about entities with spatial properties—landscapes, flowers, buildings, embodied intelligent beings, whether human or superhuman—and they have temporal properties too, since some of them change and move. We may be told that neither space nor time is quite the same there as in our world, or again that colors there are in some mysterious way "alive" or that they are audible as well as visible, and we do not quite know what this means. Still, if we interpret these narra-

tives not quite literally perhaps, but more or less literally, we can make some sort of sense of what we are told, whether or not we believe it.

We move farther away from literal intelligibility when we consider the vision of "Uncreated Light" or "Archetypal Light," described by some medieval Greek Orthodox ascetics and recently by Dr. J. M. Whiteman. Here there is no longer a plurality of spatially distinguishable objects. Are we to think of the "light" as an undifferentiated luminous expanse? Or must the word "light" be taken, not in its ordinary sense, but in a purely spiritual sense, or somehow in both ways at once? We cannot answer these questions. All we can say is that there was an experience to which the word "light" was in *some* degree appropriate.

Finally, we turn to mystical experiences proper. Here all the narrator can do by way of literal description is to mention some characteristics which the experience did *not* have. There was no space nor time nor even any distinction between the subject of consciousness and the object. He can only indicate its positive character by means of metaphor and analogies; and for us, these metaphors and analogies are irremediably opaque. We have no idea what their "cash value" is, unless and until we have similar experiences ourselves. This is not, of course, a reason for saying that such experiences cannot happen, nor yet for saying that they are unimportant when they do happen.

If my earlier remarks about the "how-what" antithesis were right, this scale or series of gradually increasing puzzlement runs all the way through the whole field of the preternatural, from the commonplace cases of card-guessing ESP at the one end to the most extraordinary mystical raptures at the other; and Prof. Lewis, when he contrasts two radically different types of preternatural phenomena, has turned a distinction of degree into a hard and fast distinction of kind.

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PARAPSYCHOLOGICAL ABSTRACTS

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[This section consists of abstracts of reports published in other journals and of unpublished reports filed at the Parapsychology Laboratory at Duke University. Readers may obtain unabridged copies (Thermo-Fax) of the unpublished reports by writing to the *Journal of Parapsychology,* College Station, Durham, N. C. The price is ten cents per page.]

CHARI, C. T. K. Parapsychological studies and literature in India. *International J. Parapsychol.,* 1960, 2, 24-36.

Historical and contemporary events are reviewed in this article to show that although parapsychology has long received only scant attention from most Indian scientists, this new field may in the foreseeable future begin to make some important contributions to Indian science. With its history and tradition, India is a rich area for parapsychological research, but only recently have there been indications that the importance of proper, objective methods of study might be appreciated. Noteworthy in this connection was the tenor of remarks at the Sixth Madras Psychology Conference of January, 1959, where an entire session was devoted to parapsychology. Here for perhaps the first time the subject was fully discussed by leading Indian philosophers and psychologists.

EISENBUD, J., HASSEL, L., KEELY, H., AND SAWREY, W. A further study of teacher-pupil attitudes and results on clairvoyance tests in the fifth and sixth grades. *J. Amer. Soc. psych. Res.,* 1960, 54, 72-80.

No indication of extrachance scoring was obtained in this study, nor was there any confirmation of the hypotheses concerning teacher-pupil attitudes and ESP which were predicted on the basis of former school studies such as the Anderson experiment on fifth and sixth grades. Some variables which might have accounted for the disparity in results are considered; for example, the voluntary participation of Anderson's teachers as compared to the more or less re-

quired participation of the teachers in the present experiment. However, the authors cautiously refrain from singling out any particular variables as responsible for their failure to repeat the earlier results.

POHL, H. L. Versuche über den Psychokinese-Effect (Investigation of the PK effect). (Unpublished manuscript.)

This paper describes a series of PK tests which the writer conducted with himself as subject. The purposes of the investigator were to test his own ability and to gain experience in conducting experiments in this area of parapsychology. Three ordinary plastic dice (with excavated spots) were tumbled in a motor-driven, elongated cage, and the uppermost faces of the dice were read at the end of each half-rotation of the apparatus. The first stage of the experiment was a "control" series in which 43,200 die-falls were observed and recorded without any conscious effort by the subject to influence the results. None of the die faces showed a deviation that was statistically different from the expected chance number. The six-face gave one of the smallest deviations, and this face was therefore chosen to be the target in an experimental series in which the subject attempted to obtain as many hits as possible.

The experimental series, which was of the same length as the control, yielded a deviation of +388 on the target face, a result in which the odds against chance are about one million to one. The difference between the score on the six-face in the control and the experimental series was also significant, the odds for the difference being about 150 to 1 against chance.

The experimenter discusses the possibility that the results might have been produced through spurious factors, such as physical bias of the dice or recording errors. Such explanations seem unlikely, but they cannot be completely excluded as theoretical possibilities. He then considers the importance of apparent psychological factors that influenced his success, the most important of which was a state of calm and relaxation in himself as subject. The work is offered as having exploratory status and it is emphasized that the value of the suggestions depends on the degree to which they are confirmed.

—*J. G. Pratt*

Ross, B. M. Successive predictions of ESP successes. *Psychol. Reports,* 1959, **5**, 200.

Experimental results are reported which suggest that subjects' predictions of their success at ESP are strongly dependent on what they think is the number of correct calls made immediately preceding their predictions, regardless of whether they have been told their correct number of hits or given a random number instead.

STEVENSON, I. The evidence for survival from claimed memories of former incarnations. Part I. *J. Amer. Soc. psych. Res.,* 1960, **54**, 51-71.

The general type of evidence believed to favor the reincarnation hypothesis is reviewed, and special attention is then given to "the most important evidence," the apparent memories of former incarnations. Of the several hundred published and reported cases of this type with which the author is familiar, the majority contained no definite parapsychical features or were not verifiable if they did. A second group of 27 cases showed knowledge of places or events which apparently were not the result of previous sensory experience. In a third group there were 44 cases in which a person reportedly recalled specific details about himself during a previous existence as another definitely identified person.

WEIANT, C. W. Parapsychology and anthropology. *Manas,* 1960, **13**, 1-2, 7-8.

Despite their opportunities to observe seemingly parapsychical phenomena, anthropologists in general have been extremely reserved toward occurrences of this sort. The present status of parapsychology is impressive, and "where there is so much smoke, there must be some fire." That the anthropological field may be a rich one for investigation along these lines is suggested by a number of seemingly parapsychical occurrences which the author reports, both from his own observations and from those of a number of other outstanding anthropologists of the past and present who have been exceptions to the ultraconservative attitude. Anthropologists should become acquainted with techniques of parapsychological research

in order to distinguish the real from the illusory, for if these phenomena are genuine, there are certainly "exciting" implications for anthropology. "Only a few times in the history of civilization has an intellectual challenge of this magnitude presented itself."

WEST, D. J. Visionary and hallucinatory experiences: a comparative appraisal. *International J. Parapsychol.*, 1960, 2, 89-100.

Two categories of persons report hallucinations: mentally sick patients and those who have had psychic experiences. From his professional experiences as psychiatrist and as parapsychologist, the author has found that the spontaneous psychic experiences reported to parapsychologists are generally different in frequency and quality from those associated with illness and abnormal physiological states. That an occasional hallucination does occur to apparently normal people is suggested by the results of the Census on Hallucinations obtained by the Society for Psychical Research, as well as by the types and numbers of reports received by parapsychologists.

Although it is difficult to draw a clear-cut line between genuine and pseudo-hallucinations, certain distinctions can be found between the hallucinations of normal people and those of the mentally ill. Pathological hallucinations tend to follow certain rigid patterns which fit in with the established delusory ideas of the patient. They tend to recur repeatedly and to be accompanied by other symptoms of illness, particularly disturbances in consciousness and loss of awareness. Spontaneous psychic experiences, on the other hand, are more likely to be isolated cases in people's lives, not connected with any known disturbance, and definitely not accompanied by any loss of contact with the normal surroundings. In a typical spontaneous case, the percipient sees a person that he recognizes or a vision which he interprets as meaningful, and the appearance is integrated into his normally perceived surroundings.

Some difficulty in classification comes from the occasional multiple hallucinations reported by very suggestible people. These do not clearly come under the category of the pathological nor are they usually of much interest to the parapsychologist.

GLOSSARY

A description of the basic experimental methods, of the findings, and of the statistical procedures for evaluating ESP and PK results may be found in *Parapsychology, Frontier Science of the Mind* by J. B. Rhine and J. G. Pratt (published by Charles C. Thomas, Springfield, Illinois, U.S.A., Blackwell Scientific Publications, Ltd., Oxford, England, and The Ryerson Press, Toronto, Canada).

AGENT: The "sender" in tests for telepathy, the person whose mental states are to be apprehended by the percipient. In GESP tests, the person who looks at the stimulus object.

BT (Basic Technique): The clairvoyance technique in which each card is laid aside by the experimenter as it is called by the subject. The check-up is made at the end of the run.

CALL: The ESP symbol selected by the subject in trying to identify a target.

CHANCE: The complex of undefined causal factors irrelevant to the purpose at hand.

Chance Expectation = Mean Chance Expectation: The most likely score if only chance variation is present.

Chance Average: Mean chance expectation expressed as an expected score, generally in terms of average per run.

CHI SQUARE: A sum of quantities each of which is a deviation squared divided by an expected value. Also a sum of the squares of CR's.

CLAIRVOYANCE: Extrasensory perception of objective events as distinguished from telepathic cognition of the mental activities of another person.

CR (Critical Ratio): A measure to determine whether or not the observed deviation is significantly greater than the expected random fluctuation about the average. The CR is obtained by dividing the observed deviation by the standard deviation. (The probability of a given CR may be obtained by consulting tables of the probability integral, such as Pearsons.)

CR_d (Critical Ratio of the Difference): The observed difference between the average scores of two samples of data divided by the standard deviation of the difference.

DEVIATION: The amount an observed number of hits or an average score varies from the mean chance expectation or chance average. A deviation may be total (for a series of runs) or average (per run).

DISPLACEMENT: ESP responses to targets other than those for which the calls were intended.

Backward Displacement: ESP responses to targets preceding the intended targets. Displacement to the targets one, two, three, etc. places preceding the intended target are designated as (—1), (—2), (—3), etc.

Forward Displacement: ESP responses to targets coming later than the intended targets. Displacement to the targets one, two, three, etc. places after the intended target are designated as (+1), (+2), (+3), etc.

DT (Down Through): The clairvoyance technique in which the cards are called down through the pack before any are removed or checked.

ESP (Extrasensory Perception): Awareness of or response to an external event or influence not apprehended by sensory means.

ESP CARDS: Cards, each bearing one of the following five symbols: star, circle, square, cross and waves (three parallel wavy lines).

ESP PACK: Twenty-five ESP cards.

Closed Pack: An ESP pack composed of five each of the five symbols.

Open Pack: An ESP pack made up of the ESP symbols selected in random order.

EXPECTATION: See *Chance.*

EXTRACHANCE: Not due to chance alone.

FREE MATERIAL: The stimulus objects of experiments in which an unlimited or unspecified range of stimulus objects is employed (as contrasted with methods such as card-calling in which the subject knows that the stimulus object is one of a known range).

GESP (General Extrasensory Perception): A technique designed to test the occurrence of extrasensory perception, permitting either telepathy or clairvoyance or both to operate.

MCE (Mean Chance Expectation): see *Chance.*

P (Probability): A mathematical estimate of the expected relative frequency of a given event if chance alone were operative.

PARANORMAL: Parapsychical or parapsychological.

PARAPSYCHOLOGY: A division of psychology dealing with behavioral or personal effects which do not fall within the scope of physical principles.

PERCIPIENT: See *Subject.*

PK (Psychokinesis): The direct influence exerted on a physical system by a subject without any known intermediate physical energy or instrumentation.

PLACEMENT TEST: A PK technique in which the aim of the subject is to try to influence falling objects to come to rest in a designated part of the throwing surface.

PRECOGNITION: Cognition of a future event which could not be known through rational inference.

PREFERENTIAL MATCHING: A method of scoring responses to free material. A judge ranks the stimulus objects (usually pictures in sets of four) with respect to their similarity to, or association with, each response; and/or he ranks the responses with respect to their similarity to, or association with, each stimulus object.

PSI: A general term to identify personal factors or processes which are non-physical in nature. It approximates the popular use of the word "psychic" and the technical one, "parapsychical."

PSI-MISSING: Exercise of psi ability in a way that avoids the target the subject is attempting to hit.

PSI PHENOMENA: Occurrences which result from the operation of psi. They include the phenomena of both ESP (including precognition) and PK.

PSYCHICAL RESEARCH: Older term used for parapsychology.

QD (Quarter Distribution): The distribution of hits in the record page (or in a logical subdivision thereof, such as the set or the half-set) as found in the four equal quarters formed by dividing the selected unit horizontally and vertically.

RANDOM ORDER: An order of events which displays no trends or regularities that would allow any inference regarding one event from one or more of the others in the series.

RUN: A group of trials, usually the successive calling of a deck of 25 ESP cards or symbols. In PK tests, 24 single die throws regardless of the number of dice thrown at the same time.

SCORE: The number of hits made in any given unit of trials.
Total Score: Total of scores made in a given number of runs.
Average Score: Total score divided by number of runs.

SD (Standard Deviation): Usually the theoretical root mean square of the deviations. It is obtained from the formula $\sqrt{npq}$ in which n is the number of single trials, p the probability of success per trial, and q the probability of failure.

SERIES: Several runs or experimental sessions that are grouped in accordance with a stated principle.

SESSION: A unit of an ESP or PK experiment comprising all the trials of one test occasion.

SET: A subdivision of the record page serving as a scoring unit for a consecutive group of trials, usually for the same target.

SIGNIFICANCE: A numerical result is significant when it equals or surpasses some criterion of degree of chance improbability. The criterion commonly used in parapsychology today is a probability value of .01 or less, or a deviation in either direction such that the CR is 2.58 or greater.

SINGLES TEST: A PK technique in which the aim of the subject is to try to influence dice to fall with a specified face up.

SPONTANEOUS PSI EXPERIENCE: Natural, unplanned occurrence of an event or experience that seems to involve parapsychical ability.

STIMULUS OBJECT: The ESP card or drawing or other object, some identifying characteristic of which is to be apprehended by the percipient.

STM (Screened Touch Matching): An ESP card test in which the subject indicates in each trial (by pointing to one of five key positions) what he thinks the top card is in the inverted pack held by the experimenter behind a screen. The card is then laid opposite that position.

SUBJECT: The person who is experimented upon. In ESP tests, most commonly the percipient (though also the agent in GESP and telepathy). In PK tests, any individual whose task it is to influence the objects thrown.

TARGET: In ESP (including precognition) the objective or mental events the subject is attempting to respond to. In PK tests, the faces of the die which the subject attempts to bring up in the act of throwing. In placement tests, the designated part of the throwing surface.

Target Card: The card which the percipient is attempting to identify or otherwise indicate a knowledge of.

Target Pack: The pack of cards the order of which the subject is attempting to identify.

Target Face: The face on the die which the subject tries to turn up by PK.

TELEPATHY: Extrasensory perception of the mental activities of another person (as distinguished from clairvoyant cognition of objective events).

TRIAL: In ESP tests, a single attempt to identify a stimulus object. In PK tests, a single throw of the dice or other objects thrown.